RISC user

JANUARY/FEBRUARY 1993
Volume 6 Issue 3
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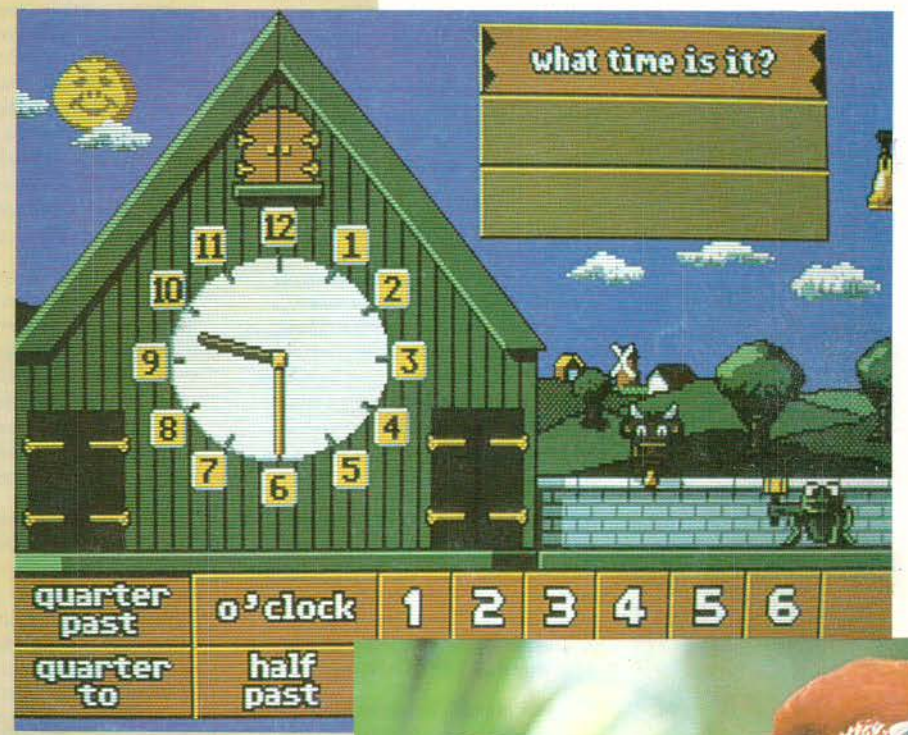
The magazine for users of Acorn RISC computers

Can Computer Games Educate?



Colour Cards Compared

CADet: Computer Aided Design

Palette Studio's Imagery

The Times and Sunday Times on CD-ROM

JANUARY/FEBRUARY 1993
VOLUME 6 ISSUE 3

RISC user

THE MAGAZINE FOR USERS OF ACORN RISC COMPUTERS

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Welcome to what may well be the biggest issue of RISC User yet. At 80 pages there just has to be something for everyone in the following pages. Our aim is to continue providing a wide variety of easy-to-read articles, and no-nonsense informative reviews on which you can rely, together with the wealth of quality information and news which has already made RISC User so well respected. We hope you enjoy this first issue of 1993.

Acorn and Education

Late last November I represented RISC Developments during the course of an Acorn Roadshow. For those unfamiliar with this event, I will describe briefly the format. Some twenty-five or more software houses (their representatives to be precise) travel round the country for a week by coach accompanied by a lorry full of equipment. Each day an entire exhibition is set up, open to teachers, advisors and others with an interest in education.

Roadshows like this have been organised two, and sometimes three, times a year for the past four years, and by now there must be very few parts of the British Isles which have not been visited by Roadshow events (if one hasn't come your way then talk to Acorn).

This was my fifth Roadshow event, and I have to say that it now presents a very professional and polished face on all that is best in software (and hardware) for the educational market. On this last occasion I was particularly struck by the sophistication of so much that was on offer - the educational market really is well served by the variety and quality of software available.

The use of CD-ROM is clearly an area of potentially enormous benefit. It provides both the speed and size of storage needed, for example, in reproducing high quality speech and sound. One application, still under development, which impressed me considerably was its use within modern language teaching, an area yet to benefit significantly in IT terms.

Another original application, and again under development, was a geographical mapping package. Using this you can construct a detailed map to any scale, and then (and this is the power and beauty of this application) produce a 3D view of the resulting landscape from any reference point - ideal for investigating those "what if" scenarios: what if a motorway is built here, or if an industrial development is allowed there? If this software could be used in conjunction with genuine OS maps, think of the potential.

A further impressive application, one which is available now, concerned animation. This software is supplied with many discs of examples covering a wide variety of devices. Lastly, a combination of software and measuring equipment which caught my attention provides a complete insight into weather recording and forecasting for Junior School children.

I have deliberately been brief in my descriptions, but if you want to find out more then I suggest you visit the BETT Show, this year at the National Hall, Olympia, London from 20th to 23rd January. If you want to explore further the applications I have mentioned above then visit the stands of Oak Solutions, Clares Micro Supplies, 4mation and TAG.

RISC Developments will have a prominent stand at this exhibition (stand 331) where we will be promoting RISC User magazine, and our range of software and hardware. The BETT Show is probably the most important event each year in bringing together computing and education. If the Roadshow is anything to go by, then there will be many impressive demonstrations to look for. And if you haven't seen the new *Masterfile 3*, RISC Developments' recently announced database package, then why not visit our stand as well.

M.W.

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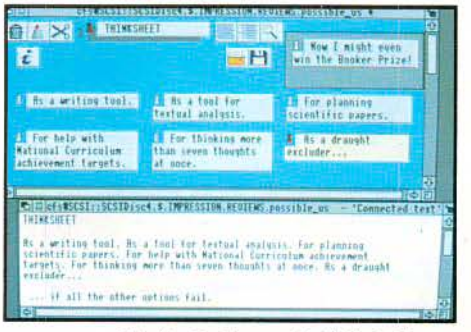
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For help with National Curriculum achievement targets.
For thinking more than seven thoughts at once.
As a draught excluder...
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As a writing tool. As a tool for textual analysis. For planning scientific papers. For help with National Curriculum achievement targets. For thinking more than seven thoughts at once. As a draught excluder...
... if all the other options fail.

Circle Software's ThinkSheet
page 44

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VERSION 3

For all Acorn 32-bit RISC computers

Masterfile

Powerful Multi-tasking Database

Masterfile version 3 is the latest development in the best selling family of database programs for Acorn computers. It is fast, simple to use and provides powerful data management facilities suitable for home, education and business use. Included amongst its many features is a very comprehensive indexing system allowing data to be accessed in any order. In addition, subsets may be created allowing access to just those records which match the search criteria. Both indices and subsets are updated automatically when records are added, modified or deleted. The report generator allows databases to be printed in card or spreadsheet format, and provides full label printing facilities.

- Fast,multi-field indexing
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- Range checking data entry
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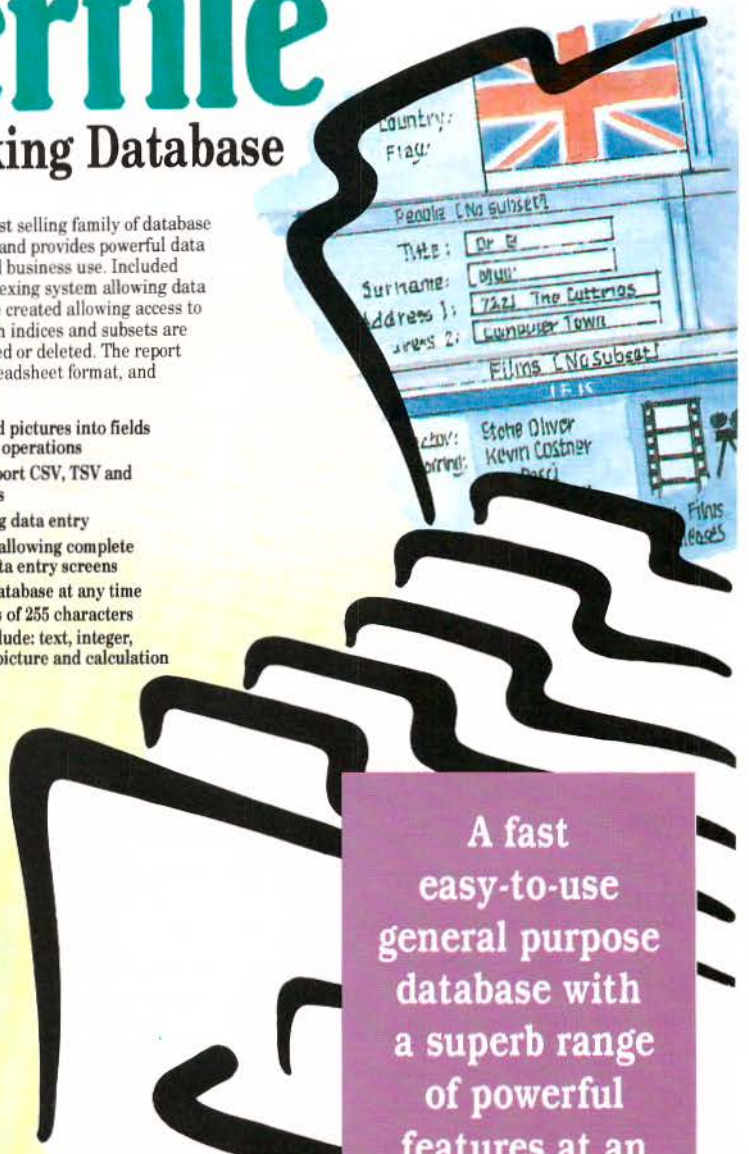
- Up to 255 fields of 255 characters
- Field types include: text, integer, decimal, date, picture and calculation

Supplied with sample databases, and a user guide containing a step-by-step tutorial and reference section describing all the facilities provided.



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To trade-in an earlier version of Masterfile, please return your original disc to the address below, and deduct £5 inc VAT from price. Only one trade-in allowed per order.

A fast easy-to-use general purpose database with a superb range of powerful features at an affordable price

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Masterfile in Education

Masterfile 3 has been designed in conjunction with IT advisors and is available at a special educational price. A site licence for 30 users is available priced £245. Please phone for further details.

News

COLOURFUL PRINTING ON RISC OS 3

Ace Computing has released the first RISC OS 3.10 compatible driver for the Hewlett Packard DeskJet 550C printer (the latest version of the popular 500C). The 550C contains two printing heads, one for black and one for colour, thus enabling true black to be produced, rather than the browny black produced by mixing all three colours in the colour print head. The new driver from Ace makes use of this facility, and a spooler feature makes use of background printing, thus saving a lot of time. An enhanced version of the printer driver, called the *PROdriver*, can cope with colour separation, 24-bit colour, automatic background printing and spot colour. The prices for the various drivers are as follows:

RISC OS 2 standard driver	**£18.80**
RISC OS 3 standard driver	**£18.80**
RISC OS 3 PROdriver	**£47.00**

All prices include VAT. An upgrade from the RISC OS 2 standard driver to the RISC OS 3 version is available for £5.00 by returning the original disc. For more information, contact Ace Computing, 27 Victoria Road, Cambridge CB4 3BW, tel. 0223 322559, fax 0223 69180.

RISC Developments also does a printer driver for the 500C/550C, and the disc contains both RISC OS 2 and RISC OS 3 drivers for £17.63 inc. VAT.

CD-ROM NEWS FROM EESOX

Eesox Ltd. is a new company, hailing from Cambridge, which is involved in the multimedia world of CD-ROMs. Its first product is the *CD Simulator*, which allows a hard disc partition to behave exactly as if it were a CD-ROM. This enables CD-ROM software to be developed on a writable medium, but problems such as incorrect pathnames, access speeds and attempting to write to the medium can be tested for and avoided when the CD-ROM is actually produced. The product therefore avoids having to produce one-off CD-ROMs to test applications and data which will be supplied on them. CD Simulator costs £151.58 inc. VAT.

The second service offered by Eesox is low cost CD-ROM mastering, using 'write once' ISO 9660 CD-ROM discs. A complete CD-ROM can be produced for as little as £150, with further copies for as little as £45. Most mastering jobs can be done within 24 hours, and the formats catered for include PC, Archimedes, Macintosh, CDTV and SUN. For more information contact Mark Watson, Eesox, 5 Hillfield Road, Comberton, Cambridge CB3 7DB, tel. 0223 264242.

GAMES NEWS

Alpine Software has announced details of its new game *Cyborg*, available for £25.95 inc. VAT. The game claims to combine the best features of a fast action arcade-style game, coupled with the atmosphere of an illustrated multi-location adventure.

Cyborg

The adventure section has been made very easy to understand, even for the absolute beginner, but advanced players can choose a more difficult level if they wish. The game will be supplied on three discs of highly compressed data, and will be available from Alpine Software, P.O. Box 25, Portadown, Craigavon BT63 5UT, tel. 0762 342510.

Aldebaran is a new game from Evolution Computer of Germany, hopefully available by the time you read this, costing £34.90 inc. VAT. The story goes that the human race has left the solar system because the sun is about to die, and has settled in the Aldebaran system. However, a race of aliens in the neighbourhood has a habit of bombing stars with asteroids to provide energy for their needs, and guess what? They're bombing Aldebaran, and you've got to save the whole human race by destroying the approaching asteroid, as well as a host of nasty alien ships. Fast 3D graphics and galactic swashbuckling from Evolution Computer, Volmerstrasse 1, D-5882 Meinerzhagen, Germany, tel. 010 49 2354 14355. Evolution's UK distributor is Maps, P.O.Box 2841, 87 Vivian Road, Harborne, Birmingham B17 0DL, tel. 021 428 2696.

Finally, TBA Software is a new company on the Archimedes games scheme, and it aims to provide cheap software of a very high quality. Judging by the games it has lined up, it will do just that: its first release is a game called *DragonBall*, an excellent version of Breakout with a host of extra features and additions, costing £14.99 inc. VAT and p&p. For more information, contact TBA Software, 24 Eastgate, Aberystwyth, Dyfed, Wales SY23 2AR.

News

WHERE, OH WHERE, HAS MY UPGRADE GONE?

Supplies of RISC OS 3.10 chip sets for A5000 users continue to be limited, even though the complete upgrades for RISC OS 2 users are more readily available. Another Acorn product which hasn't arrived at the time of writing is the A-Link for the Pocket Book, although the Pocket Book itself is now available. Happily, the other new Acorn products seem to be arriving in numbers.

EMR'S SOUND ENGINEER

EMR has announced a new product in its extensive range of music software. *Sound Engineer* is an advanced sound sample editing package, and has special features (such as envelope shaping) which allow the samples to be used with a MIDI setup. Sampling can be done from within with Sound Engineer using EMR and Oak samplers, and samples from any other Archimedes samplers can be loaded and saved in various formats. For more information, contact EMR Ltd. at 14 Mount Close, Wickford, Essex SS11 8HG, tel. 0702 335747.

FONTS ON RISC OS 3

The Electronic Font Foundry (EFF) now has over 500 fonts available in the new RISC OS 3 format. This new format includes *kerning tables* which allow the computer to adjust the spaces between characters automatically, making results look that much more professional. Following this, EFF has reduced the prices of its RISC OS 2 fonts by 30%, and has continued to expand its range of typefaces available. For more details, contact EFF, 50-52 Upper Village Road, Ascot SL5 7AQ, tel. 0344 28698, fax 0344 872923.

TOTAL
Produced with Risc OS 2 Fonts

TOTAL
Produced with Risc OS 3 Fonts

LINKWORD FROM MINERVA

At the same time as announcing CADet (see the review in this issue), Minerva released details of *LinkWord,* a new concept in language learning. Based on memory techniques, LinkWord not only teaches you a language but also how to remember it, using a system of pictures in English which are easy to remember. Aimed at people who want to learn the basics of a language in a hurry, LinkWord costs £46.95 inc. VAT from Minerva Software, Minerva House, Baring Crescent, Exeter EX1 1TL, tel. 0392 437756, fax 0392 421762.

SILICA EXPAND THEIR FLARES

Silica Software Systems has released a new addition to its *Flare* art package, namely *Fades*. This is a carousel facility which enables users to build up a rolling display of Flare pictures, or sprites from other packages. Text in any font can be added as a title and the length of display times can also be set. Flare has also been enhanced to support RISC OS printer drivers. Flare with Fade costs £22 inc. VAT from Silica Software Systems, Mallards, Lower Hardres, Canterbury CT4 5NU.

MEMORY DEVELOPMENTS

RISC Developments Ltd. has just launched an 8Mb RAM upgrade for the A400 series. The prices for the various machines are:

A410/1	**£569 ex. VAT**
A420/1	**£509 ex. VAT**
A440/1 and A440	**£479 ex. VAT**

Another product from RISC Developments, which will solve the memory limitations on the cheapest Acorn machine, is a 4Mb upgrade for the A3010, priced at £129 ex. VAT. The hardware department is also working on a A5000 8Mb board, with planned release early in the new year.

Beebug Ltd. has announced a special offer based around the A3010. The *A3010 Home Professional System* consists of an A3010, Acorn colour monitor, 1Mb upgrade (making 2Mb in total), internal 20Mb hard disc, Ovation DTP software, TypeStudio text effects package, PipeDream 3, Chess, Artisan II and Interdictor, all for £899 inc. VAT. A 60Mb drive can be fitted instead of 20Mb for £100 more, and 4Mb of memory can be fitted for an extra £100. Contact Beebug Ltd. and RISC Developments Ltd. at 117 Hatfield Road, St. Albans, Herts AL1 4JS, tel. 0727 40303.

VIDC20 AT LAST

ARM Ltd. has announced its newest chip, the VIDC20. This video and sound chip provides 24-bit colour (something Acorn users have been wanting for some time), with an increased colour palette over the VIDC10, which is used in current Acorn computers. Acorn has said it will use the new chip in its future machines, which is an interesting statement: usually Acorn is very coy about giving out any details of new products in the pipeline.

NEW WINDOWED

Armen Software has updated its WindowEd template editor (see RISC User 5:5) to version 1.13. For a free upgrade, send your original disc to Armen Software, Laxton House, Oundle, Peterborough PE8 4AG, tel. 0832 273444.

NEW VERSIONS FROM KLEIN COMPUTER

Klein Computer from Germany has announced upgrades for five of its products. The following products can be upgraded to these versions:

BestForm 1.2	**DM 30**
FunctionPlotter 2.0	**DM 15**
MouseRecorder 1.2	**DM 15**
HD Backup 2.1	**DM 15**
G-Draft 1.0	**DM 75**

Post and packing is DM 10. It would be worth checking the current exchange rate before upgrading, in view of the current economic climate. Klein will accept pound notes, English cheques and Eurocheques drawn in Deutchmarks (not in pounds, as the transfer costs are too high), Visa, and Eurocard/Mastercard. Contact Klein Computer, Haßlocherstrße 73, D 6090 Rüsselsheim, Germany, tel. (+49) 6142 81131, fax (+49) 6142 81256.

PUBLIC DOMAIN VIRUS SMASHER

It's always good to see more effort being put into protecting users against the effects of computer viruses, and a new 'product' has been launched by Digital Phenomena to help the cause. The major difference between *Guardian* and the commercial virus killing software is that it is Public Domain, so free updates are available simply by sending in a blank formatted disc to the author. Digital Phenomena claims that Guardian has as many features as Pineapple Software's Killer (see review in RISC User 5:10), and there is also a 24 hour technical help line for viewdata users. For details of this potentially very valuable service, contact Digital Phenomena, 104 Manners Road, Southsea, Hants PO4 0BG.

NETWORK SCREEN VIEWER

Sanjay Pattni has just finished *NetView*, an Econet utility which allows network users to view screens on other machines connected to the same network. It can view any RISC OS machines, as well as BBC and Master screens, which are automatically converted to sprite files. Screens can be re-viewed at defined time intervals, so an up to date version of another screen can be viewed in the host's Desktop. There is also a password protection system to prevent unauthorised network spying, making the application ideal for teachers who want to know what their pupils are up to. NetView costs £34.99 inc. VAT and p&p. For more details, contact Sanjay Pattni, Flat 11, 86 Ifield Road, London SW10 9AD, tel. 071 351 6192.

SAFE AS THE MAN IN THE IRON MASK

Turing Tools of Oxford has released details of a new product for protecting files, called *IronMask*. IronMask is a password controlled file security system for RISC OS computers which works by the so-called shielding of files. This means that the contents of files are encrypted using passwords (so that the *only* way of decrypting the files is by knowing the password), so IronMask is required to load these files meaningfully. While IronMask is running, shielded files cannot be opened, run, copied, moved, deleted or renamed, and as you need to have IronMask running to decrypt files, this makes for a very secure system: shielded files can be copied freely in their encrypted form, but you need to know the password to convert them to anything usable. IronMask costs £59.00 ex. VAT for the first copy, and £39.00 ex. VAT for each additional registered copy. For details, contact Turing Tools, 149 Campbell Road, Cowley, Oxford OX4 3NX, tel. 0865 775059.

NAUGHTY, NAUGHTY, VERY NAUGHTY

Sherston Software has brought out a new range of educational titles called *Talking Books*. These 'books' incorporate a system called *Playbook* which uses recorded human speech to tell the story. Children can move through the pages by clicking the mouse, and can ask the computer to repeat any words with which they may have difficulty. The first stories come under the title of the *Naughty Stories*, featuring *Billy the Bothersome Bully*, *Doris the Dotty Dog* and *Edwina's Energetic Elephant*. Each title comes with a normal story book as well, and all three should be released in January 1993.

Also from Sherston in January will be *Badger Trails*, a multimedia simulation pack all about badgers. In the simulation a badger from a set which children have been watching is accidentally carried away in a horse box, and the story is depicted throughout from the badger's point of view. The pack contains a wealth of support materials, including a video following the discovery of one of the biggest sets in Gloucestershire. The price is expected to be in the region of £35.00 ex. VAT. For more details, contact Sherston Software, Swan Barton, Sherston, Malmesbury, Wiltshire SN16 0LH, tel. 0666 840433, fax 0666 840048.

4MATION CATALOGUE

4Mation has brought out its 10th anniversary software catalogue, which can be obtained free of charge by sending a large SAE to 4Mation, 14 Castle Park Road, Barnstaple, Devon EX32 8PA.

NEW G.A.HERDMAN EDUCATIONAL SOFTWARE

G.A.Herdman Educational has announced details of two new titles for secondary and tertiary educational sectors. The first is *Chemical Spectra*, costing £19.99 for each of the two discs Chem_Spec1 and Chem_Spec2. Chem_Spec1 contains 30 infra-red spectra of various chemical compounds, plus supporting text and data files. Chem_Spec2, on the other hand, contains 20 proton-NMR spectra, again with text and data files. The second set of discs consists of *DTP_Images* numbers 12 and 13, which contain clip art to support science teachers. Disc 12 contains various 4-stroke engines, science worksheets and optical illusions, and a couple of items related to displaying the world. Disc 13 contains a wide range of familiar animals, and each of these discs costs £8.99. Prices do not include VAT as G.A.Herdman are not VAT registered, and postage and packing is an extra £1.50 in all cases. For more details contact G.A.Herdman Educational, 43 Saint Johns Drive, Clarborough, Retford, Notts DN22 9NN, tel./fax 0777 700918.

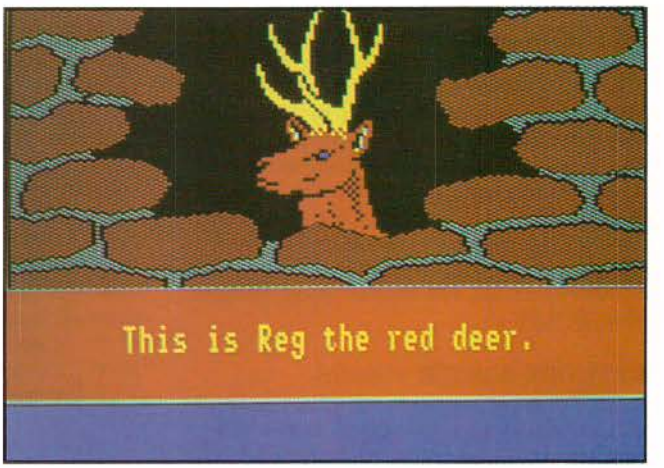
Can Computer Games Educate?

Chris Drage attempts to answer this tricky question with reference to a wide range of software packages used both at home and in schools.

This is the first in a series of articles aimed to help you get the best educational use out of your RISC computer, whether you are a parent, teacher or simply an interested adult who finds the need to use the computer in an educational context. The series aims to explore a wide range of applications suitable for children at all levels and will make practical suggestions as to choice of suitable hardware and software, and how to get the best out of each. We begin by looking at the role of play.

Fun School

Is there any justification in educational terms for letting children play computer games? The computer is a powerful vehicle when it is used in the context of the curriculum, forming an integral part of the child's range of learning experiences. Used in conjunction with other media a great deal of thinking and discussion is encouraged. The resulting exchange of ideas, more often than not, results in children learning from each other and not just from the teacher.

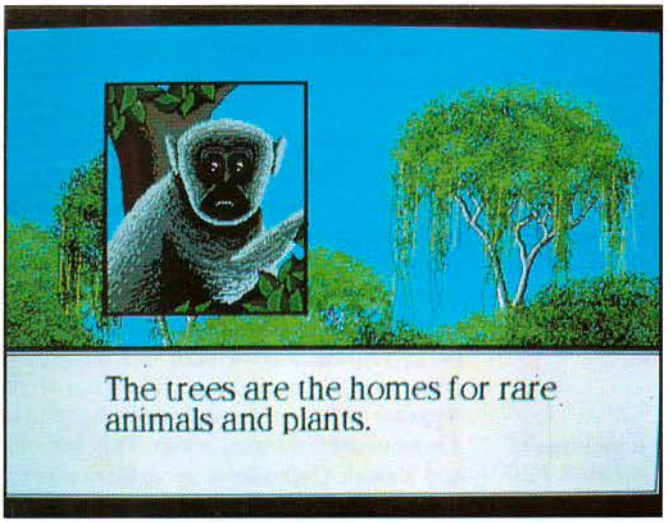


Nature Park Adventure

Computer games which depend on fast reflexes or a race against time have limited value in educational terms, the key educational element being problem solving. However, children engaged in play are in fact practising problem solving strategies in a 'fun' situation. Such computer activity, along with other related tasks, allows children the opportunity to work in those areas of the curriculum so important for today's youngsters and to which more time must be given:

> **Problem solving and decision making - thinking skills, observation and exploration - discussion - co-operation and persistence.**

A carefully selected computer activity can help children make the best use of their intellectual ability, and by providing them with opportunities to practice specific thinking skills, can help them think more effectively in a wide variety of situations. Suitable strategy games encourage children



The Crystal Rainforest

to observe and explore hypotheses and, in the process, hopefully make connections and discoveries. Many games foster co-operation among individuals and help them appreciate the value of working together. Similarly, they often provide opportunities for children to be involved in worthwhile, focussed discussion and if the learning experience is correctly matched to childrens' abilities and maturity, and is sufficiently motivating, it will encourage children to stick with a task and not give up too easily.

PLAY AS A VEHICLE FOR LEARNING IN THE EARLY YEARS

Software for very young children frequently employs a game element in order to motivate children and encourage perseverance. Frequently children are unaware that they are using skills and concepts related to reading, for example, as they become engrossed in a game. Well designed, skill-based software in the hands of a sensitive teacher can form part of the overall strategy in helping children with specific language difficulties, particularly if used in conjunction with a diagnostic approach to learning problems. This is probably one of the rare occasions during which the classroom computer can be used with a single child, as the enormous patience of a machine (compared with that of even the most dedicated teacher or parent) is utilised to effect.

In terms of games software for this level three publishers stand out: Sherston Software, HS Software and Europress Software (see below). The following exemplify their wares:

Animated Alphabet (Sherston), for pre-school and five year old children comprises three graded activities in which the alphabet comes alive. This combines a game element with 26 effectively animated illustrations in order to motivate and stimulate children. The aim of the game is to help children recognise and distinguish between letters of the alphabet, and for this reason Sherston places a strong emphasis on the phonics (sounds) of each letter. Although young children find the program attractive and fun, its real value will depend on the parent's/teacher's skill in emphasising the phonics and reinforcing reading work undertaken separately.

Weatherman

HS Software's *Fun & Games* is a compilation of three programs which are suitable for Key Stage 1 pupils (5-7 year olds). They include attractive graphics,

animation and speech, and cover sequencing, early reading and number skills and visual/auditory memory. I particularly like the game *Tidy* in which a 'mum' orders a child's bedroom to be tidied. Following instructions, the player must guide a parrot to tidy up. The appealing graphics and sound, coupled with the game situation, offer enormous encouragement for children for whom reading is a burden.

PRIMARY

Europress Software publishes a very useful series for home education entitled *Fun School* 3 and 4, each comprising separate suites of six programs for Key Stages 1 and 2 respectively (six suites of six programs in total). The accent is firmly on fun, with good use being made of animation, sound and appealing graphics to motivate and hold interest. The activities relate well to both the respective target age groups and to the relevant National Curriculum levels. Children do enjoy the activities very much as they are multi-level in nature and provide a challenge. They offer a useful and enjoyable means of practising and reinforcing skills learnt at school.

Dressing up problem solving in an adventure format is very popular indeed. Experimenting with ideas, discussion, formulation and sharing of strategies, drama and simulation all feature large in adventure programs. Sherston Software has a gamut of game-related, primary software all of which provide a vehicle for problem solving and co-operative endeavour. Without exception, all are loved by children. My favourites are *Nature Park Adventure*, *MapVenture* and *Crystal Rainforest*. The importance of the role of play as a vehicle for learning is exemplified by Crystal Rainforest which uses a game scenario to develop concepts of Turtle Geometry. The challenge is to save the last of Oglo's (get the anagram?!) rainforests by solving a number of turtle geometry-related problems, and to avoid the dangerous and infamous Cut & Run Sawmill Gang. The program has such a topical environmental theme it could initiate a variety of work on conservation.

Although many programs find comfortable niches in primary classrooms, some are particularly valuable in the home situation where more computer time is available to practise skills: *TV Fun & Games* (HS Software) is a compilation of three programs mainly for Key Stage 2 children (8-11 years). *Weatherman* is a delightful game which familiarises children with weather types and map symbols, whilst *Gnomework* continues where Tidy left off, and *Kevin's Quiz* allows up to three players to practise their recall of number bonds. These are particularly attractive games which children really enjoy.

For more specific skill-based software *Target Maths* (Triple R Education) is a very worthy suite of programs which I would thoroughly recommend for home use, providing they are used in the context of practice and extension of number work that the child has undergone at school. The activities are well suited to the top of Key Stage 2 and even Key Stage 3 children (12-16 years).

Similarly, with its elaborate system of colour-coded levels of achievement and multiple levels of difficulty, *10 Out Of 10* (Triple R Education) is a useful compilation of programs based on the current National Curriculum for English. It covers ten areas including spelling, punctuation, sound patterns and vocabulary. The progress of up to 64 children is automatically monitored as they work through the levels within each program and are displayed at the end in an Attainment Target related table. The zappy delivery and range of activities is guaranteed to sustain the attention of even reluctant learners.

Unfortunately, we've run out of space this month. Next month I'll look at software for those at secondary school level, including strategy games.

MicroSpell from David Pilling

Mark Moxon looks at a package which makes bad spelling a thing of the past.

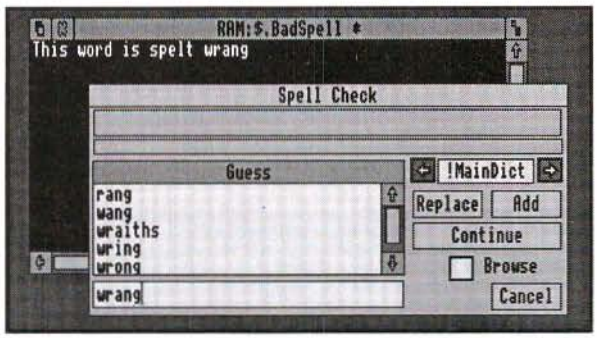
Spelling checkers are a godsend for people like me who can't type that accurately, but still try to write as fast as possible. Until now there has been no way of checking spelling in applications which don't have their own checkers, but *MicroSpell* is a stand-alone checker which will function with any application which allows text entry.

Using MicroSpell is simplicity itself. You simply run the application and it installs itself on the icon bar. Checking a file for spelling mistakes simply involves dragging the file to the icon bar, and the checker springs into life. Up pops a window containing the line with the misspelt word (which is highlighted), along with a scrollable window showing the computer's guesses as to what the word should be. You can correct the spelling of the word simply by clicking on the correct word (or entering your own), and when the whole file is checked, it can be saved away again. The checking is case sensitive so, for instance 'english' is a misspelt word, but 'English' is all right.

However, the most useful way MicroSpell can be used is in *Continuous* mode. Here, MicroSpell checks each word as it is typed, regardless of the application you are typing in. If you spell a word incorrectly, then the computer beeps to tell you of your mistake, and pressing F11 will put up the dictionary window as above. If the very useful *Foresight* option is ticked, then a window is displayed which shows the closest word in the dictionary to what you are typing. Pressing F1 will complete the word, so for example if you have just typed 'fascin', then the window will show 'fascinate', and pressing F1 will enter 'fascinate' for you.

Not content with just allowing you to check your files, MicroSpell also allows you to check the spelling of words in writable icons. Ctrl-S checks the whole of the icon containing the caret, and Ctrl-W checks the word containing the caret. Very handy if you are using a text macro program, for example.

The astute among you will realise that the keypresses described above will not work if you are entering text into an editor which already has uses for F1 and F11. To avoid this problem, the functions for F1, F11, Ctrl-S and Ctrl-W can have any key combination assigned to them, so I assigned Shift-F5 to replace F11, (as DeskEdit does not use this combination), and I could check misspelt words in DeskEdit easily.



Trapping a misspelling

MicroSpell also lets you create and edit dictionaries, and add words which are not matched, as any good spelling checker should. You can also decide which dictionary should be used for Foresight, as using one of the large dictionaries supplied will produce too many matches to be useful. Two dictionaries are provided: one is smaller and is useful for normal checking (and keeps the memory required to 352K), and the other is larger and needs 576K. The spelling system is compatible with Ovation (not surprisingly, as David Pilling wrote Ovation as well), and you can swap dictionary files between the two applications.

All in all, MicroSpell is great. If you need to add spell checking to an editor you use, then this will do the job for you at an excellent price.

Product *MicroSpell*
Supplier *David Pilling*
P.O.Box 22,
Thornton Cleveleys,
Blackpool FY5 1LR.
Price *£5.99 inc. VAT and p&p*

Using the Pocket Book and the A-Link

How does the Pocket Book compare with the Psion Series 3, and how easy is it to transfer data to and from the Arc? Lee Calcraft investigates.

Last month we took a look at the Psion Series 3, on which the Acorn Pocket Book is based. Now, at long last, we have obtained the real thing! The most obvious difference in the newcomer, apart from the presence of the Acorn logo and the use of Acorn green in place of Psion yellow, is that some of the task buttons have been changed. The Pocket book lacks the *World*, *Agenda*, and *OPL* buttons of the Series 3, and in their place boasts an *Abacus* button (for the spreadsheet), and two somewhat anonymous buttons labelled simply *Key 1* and *Key 2*. The first of these invokes the spelling checker, while the second simply reports that it can't run OPL (why would we expect it to?).

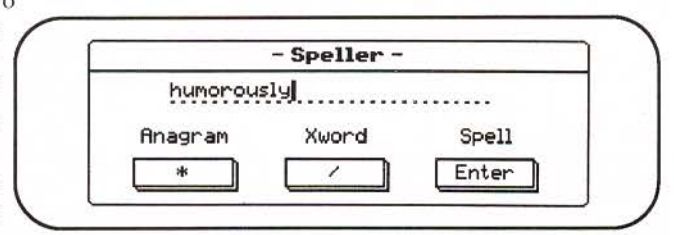
Soap on a rope!

In the first part of this review we will take a look at the two new applications, and will follow this with a report on the A-Link, designed to transfer data between the Pocket Book and the Arc.

SPELLING CHECKER

This excellent application is actually supplied on Flash EPROM, so Pocket Book users have only one free 'drive' socket. It may be run from the *Key 1* button as a stand-alone task, or from the *Write* word processor. In the latter case you can elect to check a whole document or a marked section, or simply the word at the cursor. There is no *Check as you type* option - presumably because the 4MHz NEC processor could not keep up - but the features offered are nevertheless first rate. You can specify the searching and matching criteria (of which, more in a moment), and you can opt to have misspelt words replaced with selected alternatives. Unrecognised words may even be added to a user dictionary. You can even create special dictionaries for each document encountered.

The checker may also be used in stand-alone mode, though this does not appear to be documented anywhere in Acorn's Pocket Book manual (and indeed there is not even an entry in the manual's index for the spelling checker). When you hit *Key 1* the *Speller's* (that's what it's called) main screen appears, offering a writable area with three buttons. These offer *Anagram, Xword* and *Spell*. The first two options are useful for crossword cheats. The first not only finds exact anagrams of the word entered, but can also find near misses. To use the *Xword* feature, simply type in what you know of an unknown



The speller in use

word, with question marks in the place of each unknown letter. Speller soon builds a list of possibles.

In Spell mode there is a powerful set of matching criteria selectable via the Menu key (which also apply within the word processor), as follows:

Typo substitution/deletion
Typo transposition
Case and accents
Phonetics
Run-on words

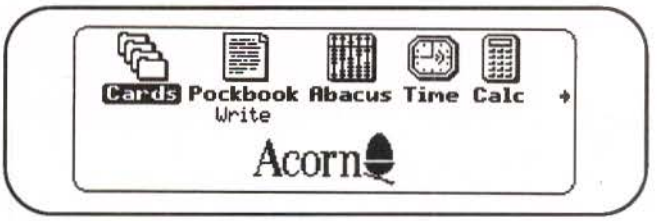
The first assumes that you have typed one too many or one too few letters in your word (e.g. if you typed *mised*, one of its suggestions for alternatives would be *missed*) or have typed one character in place of another. The second assumes that you have transposed two adjacent characters (very common with two-handed typists); while the third allows for incorrect case and accenting - so it would offer to replace *english* with *English*, or *maclean* with *MacLean* (but erroneously, not *i* with *I*).

Phonetics can be used to find the spelling of say *photo* by entering *foto*. This kind of search takes a long time (half a minute for short words - much much longer for long words), and this is the only option turned off by default. The final option identifies pairs of words run together (so it would offer *a big* as an alternative to *abig*).

The only snag with the checker is its speed. Entering *abig* with all options but *phonetic* switched on takes around 10 seconds to find *big* (typo addition), and a further 8 to suggest a *big*. This is OK for checking the spelling of single words, but makes it a very slow job to check a whole document. Minimising the options cuts the time for checking a word to around 3.5 seconds. This is still rather slow - even considering the relatively slow processor: Computer Concepts' Spellmaster on a Master 128 does the same check in around one tenth of a second. There is one major saving grace however: the whole process multi-tasks, so not only does each word appear the moment that it is found, but you can halt the operation at any time, keeping intact all finds listed up to that point.

ABACUS

This is a cut down version of Psion's stand-alone spreadsheet for the Series 3, and is supplied on internal ROM, so as to leave a free drive slot. It is a powerful and feature-laden package, offering sheets of up to 256 columns of up to 99 characters width, by 8192 rows. It provides a vast range of mathematical, statistical, logical, string and date functions; and results can be automatically displayed in graphical form, including pie charts, bar charts, and line and scatter graphs.



The Pocket Book's desktop screen

There is full support for printing and exporting data (in CSV but not Lotus format), and graphics may even be saved as PIC files. My only real reservation about this first rate application is that it may be somewhat daunting to the school kids who form the perceived market for this machine - certainly the 170 page Abacus manual will take more than a couple of lunch breaks to absorb.

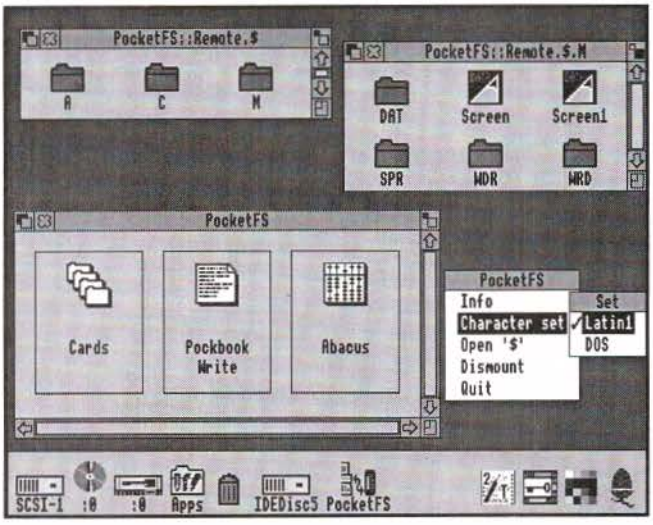
THE A-LINK

The A-Link, the software which was written for Acorn by CC, forms an integral and important part of the Pocket Book concept. It consists of a small black box some 8.5 x 3 x 1.5 cm in size, which connects to the fast serial interface socket on the left-hand side of the Pocket Book. A miniature din socket at one end of the box, affectionately termed the soap because of its rounded shape, accepts a lead which plugs directly into the Archimedes serial port (all machines but the A3000 have a suitable RS232 socket as standard).

Once the A-Link is connected, you need to configure the Pocket Book. This task, which only needs to be performed once, makes use of the *Special* menu on the Pocket Book's front screen - the *Desktop* screen as

Acorn call it. Simply toggle *Remote Link* on, and set it to 9600 baud.

At the Archimedes end you need to install the *PocketFS* application supplied on floppy disc. Make sure that your Pocket Book is switched on, then click on the PocketFS icon on the Arc's icon bar. After a few seconds of hourglass activity, a window will appear with three icons: one for the database, one for the word processor and one for the spreadsheet. Beneath each are listed the datafiles of these applications. It is good to read in the manual that these panels are configurable, and when new applications come along (such as the OPL translator) further panels can be added.



Transferring files is easy with PocketFS

To copy a file to the Archimedes, simply drag the name of the appropriate file to a Filer window or to a suitable application. To perform the reverse operation, drag your icon from a Filer window or an application's Save box to one of the three areas on the PocketFS window, and when the operation is complete its name will appear not only in the PocketFS window but in the Pocket Book's own list of files - magic.

In tests, dragging copies of this article into the Pocket Book word processor list took around 5 secs per Kbyte. If this seems a bit slow, it should be noted that the transfer process is an intelligent one, with conversion of file formats, and even character translation: one of the PocketFS menu entries lets you decide between Latin 1 and DOS character mappings.

Alternatively you can work directly with the Pocket Book's files. If you select *Open* '$' from the PocketFS menu, a Filer window look-alike opens for the Pocket Book itself. The display is hierarchical, and the top level (named *PocketFS::Remote.$*) contains the directories representing Pocket Book devices: A and B are the two solid state drives, M is internal memory, while C is the remote link itself. Opening these directories reveals further subdirectories and files etc. It is even possible to view the 171K spelling dictionary by this means. Direct transfers between PocketFS and the Pocket Book are achieved simply by dragging, and appear to be much faster than intelligent transfers, clocking in at around two seconds per Kbyte.

CONCLUSION

The Pocket Book is an excellent machine - especially for Archimedes users, where the A-Link permits reliable transfer of data within the Desktop. This is extremely useful both for backing up Pocket Book files, and also for downloading files previously prepared using the superior facilities provided by the Arc.

Potential purchasers of the Pocket Book will need to carefully weigh the relative merits of the Series 3 from which it was cloned. The Pocket Book bundles both a spelling checker and spreadsheet, while Series 3 users must purchase these as extras (at £49.95 and £69.95 inc. VAT respectively). On the other hand, Series 3 users receive the Agenda, World and OPL editor and compiler, and their stand-alone spelling checker also boasts a Thesaurus. You pays your money and you takes your choice.

Product *The Acorn Pocket Book*
The A-Link
Supplier *Acorn dealers*
Price *Pocket Book £249.95*
(£212.72 to education)
A-Link £49.95
All prices include VAT

Creating Draw files in Basic: Drawing Ellipses

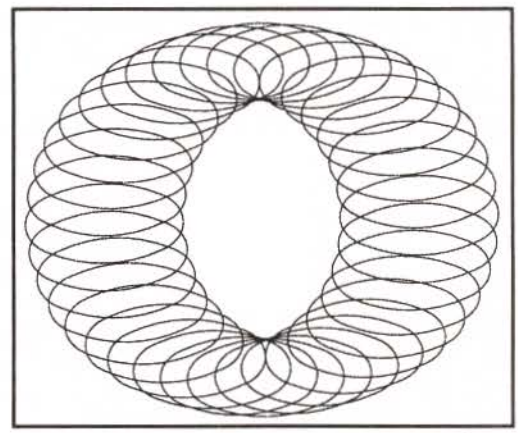
By Keith Vernon

The program listed here uses the library functions from Creating Draw Files in Basic (RISC User 5:5, 5:6 and 5:8) to create accurate ellipses in Draw. The original could create perfect circles (and more) in Draw files, and here we extend it to include ellipses. The program provides a function called PROCDraw_ellipse, which takes the following parameters:

X	X co-ordinate of ellipse centre
Y	Y co-ordinate of ellipse centre
Xm	Width of ellipse
Ym	Height of ellipse
fill%	Fill colour, or set to the value *CDraw_nofill%* for no fill
col%	Line colour
thick%	Line thickness (0=thin)
dash%	Dash pattern (0=continuous, 1-4 give different patterns)

To use the example program, type it in and save it in the same directory as the CDraw routines from before (naming the CDraw routines as *CDraw*). Next set this directory to the Currently Selected Directory, and run the program given here to create an example Draw file. The complete system will be provided on this month's disc, along with a number of other example programs.

```
   10 REM            >ToroidDemo
   20 REM Program    Ellipse generator
   30 REM Version    A 1.00
   40 REM Author     Keith Vernon
   50 REM RISC User  Jan/Feb 1993
   60 REM Program    Subject to Copyright
   70 REM            Not Public Domain
   80 :
   90 ON ERROR REPORT:PRINT" at line ";E
RL:END
  100 SYS "Hourglass_On"
  110 LIBRARY "CDraw"
  120 PROCCDraw_initialise("CDraw_Test",
0,&5000)
  130 R=200:REM radius of toroid
  140 FOR theta=10 TO 360 STEP 10
  150   tx=R*COSRADtheta
  160   ty=R*SINRADtheta
  170   PROCCDraw_ellipse(400+tx,300+ty,
100,50,CDraw_nofill%,8,1,0)
  180 NEXT
  190 PROCCDraw_savefile("Toroid")
  200 PROCCDraw_reset
  210 SYS "Hourglass_Off"
  220 END
  230 :
  240 DEF PROCCDraw_ellipse(X,Y,Xm,Ym,fi
ll%,col%,thick%,dash%)
  250 LOCAL A,B,C,D,E,K
  260 IF Xm>=Ym THEN
  270   REM the empirical bit
  280   A=Xm/Ym/10+0.5
  290   IF Xm/Ym<2 THEN A=0.7
  300   IF Xm/Ym>4.5 THEN A=0.95
  310   Xs=A*Xm
  320   Ys=SQR(1-Xs*Xs/Xm/Xm)*Ym
  330 ENDIF
  340 IF Ym>Xm THEN
  350   A=Ym/Xm/10+0.5
  360   IF Ym/Xm<2 THEN A=0.7
  370   IF Ym/Xm>4.5 THEN A=0.95
  380   Ys=A*Ym
  390   Xs=SQR(1-Ys*Ys/Ym/Ym)*Xm
  400 ENDIF
  410 REM the analytical bit
  420 B=Ym+(Ym-Ys)/3
  430 K=Xs*Xs+(B-Ys)*(B-Ys)
  440 C=(SQR(4*Xs*Xs+12*K)-2*Xs)/6
  450 D=Xm+(Xm-Xs)/3
  460 K=Ys*Ys+(D-Xs)*(D-Xs)
  470 E=(SQR(4*Ys*Ys+12*K)-2*Ys)/6
  480 PROCCDraw_openpath(fill%,col%,thic
k%,dash%)
  490 PROCCDraw_extendpath("MOVE "+STR$(
X+Xs)+" "+STR$(Y-Ys))
  500 PROC_putword(6)
  510 PROC_putwords(X+C,Y-B)
  520 PROC_putwords(X-C,Y-B)
  530 PROC_putwords(X-Xs,Y-Ys)
  540 PROC_putword(6)
  550 PROC_putwords(X-D,Y-E)
  560 PROC_putwords(X-D,Y+E)
  570 PROC_putwords(X-Xs,Y+Ys)
  580 PROC_putword(6)
  590 PROC_putwords(X-C,Y+B)
  600 PROC_putwords(X+C,Y+B)
  610 PROC_putwords(X+Xs,Y+Ys)
  620 PROC_putword(6)
  630 PROC_putwords(X+D,Y+E)
  640 PROC_putwords(X+D,Y-E)
  650 PROC_putwords(X+Xs,Y-Ys)
  660 PROCCDraw_extendpath("CLOSE")
  670 PROCCDraw_closepath
  680 ENDPROC
```



Output from Toroid Demo

HARDWARE AND SOFTWARE EXPANSION FOR ACORN COMPUTERS

DUAL RS423 SERIAL INTERFACE - two additional RS423 serial interfaces for communicating with RS423 or RS232 devices eg modems (in order to use bulletin boards), printers, plotters, instruments, etc. Up to four cards can be fitted in a computer.

IEEE488 INTERFACE - enables up to 14 test and measurement instruments, from well known manufacturers such as Hewlett-Packard, Fluke, Philips, Tektronix, etc. to be connected to the computer. For example, voltmeters, oscilloscopes, spectrum analysers, function generators, counters, logic analysers, programmable power supplies, plotters, printers, etc.

16 BIT PARALLEL I/O - provides two separate 16 bit input/output ports. Other facilities include four 16 bit counter/timers, two 8 bit shift registers and eight interrupt inputs. Applications range from measurement and control to high speed data input and output.

12 BIT ADC - provides eight single ended inputs each with an input voltage range of -5 to +5 Volts. Up to 166,000 samples per second can be taken.

STEbus INTERFACE - overcomes the limitation of a maximum of four expansion cards in a computer by enabling the use of industry standard STEbus boards in an external input/output sub-system for measurement and control applications.

SCSI DEVICES - internal and external hard disc drives, magneto-optical removable disc drives, tape streamers etc.

GINO-F 3D, GINOGRAF, GINOSURF and HERSHEY+ - the FORTRAN subroutine libraries widely used for adding graphics to engineering and scientific applications, have been implemented on Acorn RISC OS-based computers by Intelligent Interfaces. The implementation takes full advantage of the high resolution colour graphics of the computer.

Intelligent Interfaces are Bradly Associates distributor for GINO-F 3D, GINOGRAF, GINOSURF for Acorn RISC OS-based Computers.

TERMULATOR - enables a computer to emulate a terminal from the VT range (VT52, VT102 or VT220) or a Tektronix 4010 graphics terminal.

Termulator a trade mark of Acorn Computers Limited is applied to this product under licence from Acorn Computers Limited.

COMPLETE SYSTEMS - configured to customer's requirements by fitting RAM upgrades, hard discs, expansion cards, etc.

ADVICE - SUPPLY - SUPPORT - Intelligent Interfaces were established in 1981 and have enjoyed a long relationship with Acorn Computers. This places them in an ideal position to advise on, supply and support systems purchased from them.

Intelligent Interfaces Ltd
P O Box 80
Eastleigh
Hants
SO5 5YX
Tel: 0703 261514 Fax: 0703 267904

INTELLIGENT INTERFACES

Podd for the Arc

Lee Calcraft tests his vocabulary on the Archimedes version of this BBC Classic.

The BBC micro version of Podd first appeared way back in 1983, and soon became popular both in the classroom and at home. The idea behind it is a simple one: Podd 'knows' a number of actions (116 verbs in the original version), and the child types in a word to see if Podd will respond. If the action is 'known' to Podd, he will perform it to accompanying sound effects.

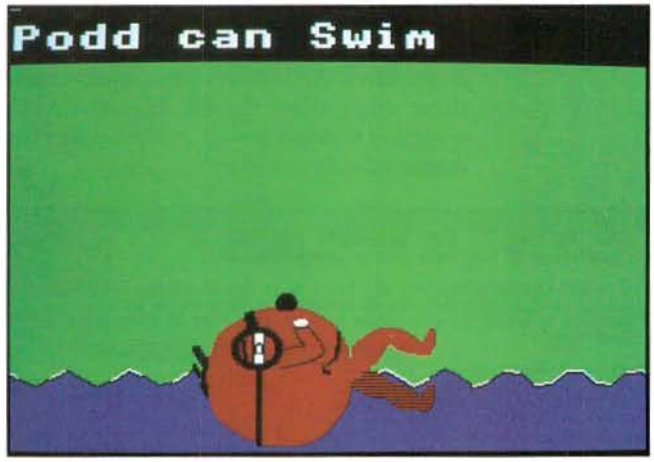
The BBC version of the program is claimed to be suitable for the 5-11 age group, though in practice children as young as 3 can get a great deal from it with a little parental help; while members of the 12-99 age group will also happily sit at the keyboard trying to think of obscure words which Podd might know.

For younger children Podd provides an excellent introduction to the computer keyboard. More importantly, it uses the power of play to promote language development, encouraging correct spelling with graphical, and sometimes humourous actions.

The newly-released Archimedes version of Podd embodies the same principles. In fact it remains faithful to the BBC Podd in many ways. Physically the two Podds are as alike as two peas (!?): research by ESM suggested that the new Podd should look just like his low resolution ancestor. Some concessions to the RISC OS desktop world have been made however: a Podd icon sits on the icon bar after you have loaded it from a directory viewer, but, as befits such software, the Desktop disappears once Podd starts in earnest.

The most obvious changes in Arc Podd are a 50% increase in vocabulary, which now includes some transitive verbs, and improved sound. This latter uses the Tracker module with sampled sounds to very good effect (try dance, talk and sing). Podd also performs occasionally without being prompted: if the computer sits idle for any length of time Podd may burst into spontaneous activity.

My only reservation about the new Podd (version 1.01) is the input routine. If a child presses Return too slowly, the action is performed as expected, but Podd then says he can't perform the next (non existent) action. Although this caught out the younger kids, it did not detract from the enjoyment of this excellent program.



Podd can swim

Arc Podd comes with full support for the Concept Keyboard, and sets of Podd activity cards are available. Suggestions for classroom activities are also included in the manual.

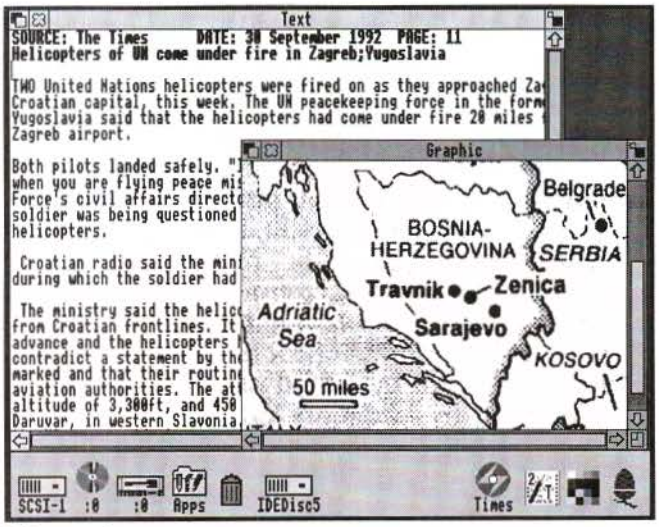
Product	*Podd*
Price	*£29.38 inc. VAT*
Supplier	*ESM* *Abbeygate House, East Road,* *Cambridge CB1 1DB.* *Tel. 0223 65445* *Fax 0223 460557*

The quoted price is for a site licence. There is no single-user price, and upgrades from BBC Podd are unfortunately not offered. Packs of 52 photocopiable A4 activity cards are available at £18.75.

The Times and Sunday Times on CD-ROM

New front end software for the Arc brings the delights of the Times CD without the inconvenience of the Emulator, as Lee Calcraft demonstrates.

The Times and Sunday Times have been available on CD-ROM since early 1991. Annual discs contain text and pictures from the two newspapers, and may be viewed on a PC or Apple Macintosh connected to a suitable CD-ROM drive. Archimedes users could access these discs using the PC Emulator, but searching is rather a slow process. Enter the Archimedes front end.



!Times gives Archimedes users access to an immensely rich database.

Times Network Systems Ltd., the producers of the CDs, now offer a Desktop application which claims to give Archimedes users easy access to their CD-ROMs. This is a shrewd move on the part of Times Network Systems, since it opens up the market for their discs to the field of education which Acorn dominates - and it does so at very little cost, since it avoids having to produce special versions of the CDs themselves. So how does this work out in practice?

TIMES FOR RISC OS

Purchasers of the Archimedes version of the Times and Sunday Times on CD-ROM receive a 3.5 inch floppy disc and a dedicated Archimedes manual, in addition of course to the CD itself. This comes in various forms: you can either opt for a ROM covering a single year (1990 or 1991), or you can take out a subscription providing quarterly updates. The accompanying manual is clearly written, though its ample illustrations are unfortunately not reproduced in halftone. Running *!Times*, as it is referred to, is simplicity itself. Simply transfer the application to your hard disc (floppies are also supported), and then double-click in its icon.

It takes an age to install on the icon bar (over 14 seconds on my A540) because it constructs a number of indices at this point. These are held in RAM, taking the memory required by the program to a massive 992K - so you will need a 2Mb machine at least. Once installation has taken place, clicking on the icon bar icon displays the front panel. From here you can control the date range over which any search is carried out, the sections of the newspaper searched (e.g. Home News, Business, Sport, Features etc.), and enter search strings.

The latter may be located in any one of three categories:

Headlines
Bylines
or Body text

You may enter up to three words in any string, and an asterisk may be used as a wildcard. But it may only be applied to the ends of words, and if you do use a wildcard, only a single word may be entered. These seem to be rather arbitrary limitations. But ignore them at your peril. I entered *Acorn Computer** at one point, and the whole task died.

Searching is relatively fast considering the inherent slowness of the medium -

somewhere between 2 and 6 seconds with an ARM3, depending on complexity. Once a search has been performed, the number of finds is listed at the top of the front panel, and the search terms appear in a list called *Selection Criteria*. If you wish, the search can then be qualified by ANDing or ORing further searches. These all appear on the list as they are performed, and may even be subsequently edited - though there is no way to specify that a term should *NOT* appear in a particular search.

Two buttons at the top of the control panel allow you to *Clear* or *View* the results of a search. The latter option causes the front panel to be replaced by a window displaying the titles of the first ten articles which match the criteria, all finds being presented in reverse chronological order. I have to admit that I do not like the look of this window. It uses background colours of light blue and orange (ugh!) behind alternate entries, and is of fixed size. You cannot scroll through the finds: you must repeatedly click on *Next* (or *Previous*) to show the next ten finds, and the Page Up and Down keys do not work.

Moreover, when you move from one stage to the next in this program, the previous window is automatically removed, and to reinstate it you must close the current one. Thus clicking on *View* on the front panel blows the front panel away, and replaces it with the blue and orange zebra screen. When you click on an entry here, the zebra goes smartly away to reveal a real scrollable window containing the text you have found. The font used for this display is selectable from the menu, and the target words are highlighted.

Again, to go back to the front panel, you have to click on Close to kill off the text display, and then Close the ubiquitous zebra. This means that you cannot keep two articles on screen for comparison purposes. The philosophy underlying this package clearly mirrors that of its non-multitasking ancestor (the PC version is not Windows-based).

Clicking Menu over this window offers options to print the text using a standard printer driver, or to save it as an ASCII file in one of two formats. A small proportion of the articles have an associated illustration, and clicking on the Picture entry launches a window containing a greyscale image.

The images are stored on the CD in PCX format, and the *Times* application uses a built-in copy of ChangeFSI to translate this into a sprite. I found that on some occasions this did not work, and an error message supplied the filename of the picture file on the CD. By opening the CD *TIMESPIC* directory it is possible to drop the file directly onto the stand-alone copy of ChangeFSI also supplied with the package.

There are some 4000 picture files supplied on the CD received for review (covering 1 January - 30 September 1992), and these are well rendered by ChangeFSI. For best results, you need a 256 colour mode, since this permits the use of 16 grey scales. Mode 28 works well if you have a multisync monitor. Additionally, all pictures may be saved as sprites, and like the text itself may be imported into DTP packages and the like - though of course copyright must be observed.

To conclude: this package gives Arc users access to the immensely useful Times and Sunday Times database. The accompanying Archimedes front end, while adequate for the purpose, does not reach the very high standards usually associated with these publications.

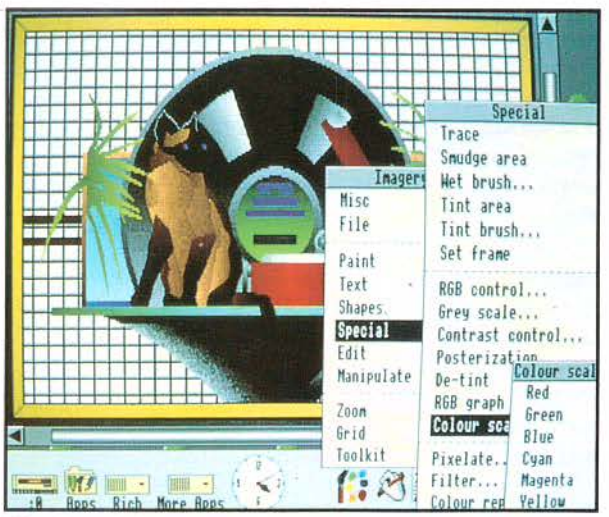
Product *Times and Sunday Times on CD-ROM*
Supplier *Times Network Systems Ltd. Priory House, St John's Lane, London EC1M 4HD. Tel. 071 782 7401 Fax 071 782 7111*
Prices *1990 (single CD) £199 (£99)*
1991 (single CD) £199 (£99)
4 issue subscription £395 (£195)
Election special (1 Jan-12 April 92) £50 (£50)

All prices exclude VAT. Education prices in brackets.

Palette Studio's Imagery

Richard Hallas reviews this sophisticated painting and image processing package.

Palette Studio's new graphics program, Imagery, is described as a picture publishing package which takes over where Acorn's Paint leaves off. It provides a range of image processing functions, and Palette Studio's advert makes a point of that fact that Imagery can be run alongside scanner, digitiser and DTP software, acting as an image editing and enhancement system.



The Special Menu

THE PACKAGE

Imagery arrived in a very nicely presented glossy cardboard box containing a registration card, disc, function key strip, large colour poster and manual. The manual is clearly presented and easy to understand, with plenty of screen shots, and it contains both reference and tutorial sections, although there is no proper index.

There is an added incentive to return the registration card: Palette Studio will send you a second disc containing some more artwork and utility programs (although after a fortnight I still have not received my copy). One side of the poster contains a set of screen-shots and a short description of each. The pictures are also provided as a set of files on the disc, and relate to the tutorial section of the manual. This was all very well-conceived and helpful, so my initial impressions were favourable.

IN USE

I explored each of the features of Imagery in turn. As the advertising blurb claims that Imagery takes over where Paint stops, I had rather expected to be able to create sprites of any size in any mode, so I was a little surprised when I initially clicked on the icon and was presented with a large screen-size window. No details of the format of the sprite in the window were immediately apparent, but it turned out to be a mode 15 sprite.

Anyway, the expected range of shape tools was present, such as solid and outline rectangles, triangles, circles and ellipses, etc. A handy little toolbox contains short-cuts to the most commonly used functions, although there are many more which are only available via the menu. Among these are the more complicated fills and all the image manipulation tools. Imagery provides a number of basic drawing tools, from simple pixel plotting and rubber lines to a fairly sophisticated airbrush and paintbrush. The airbrush has a variety of nozzles and definable density and radius, whilst the paintbrush can use a range of brushes, each of which is definable via a brush editor. It is also possible to set the X and Y scales of the brushes independently.

Lines can be drawn in a wide variety of styles, and dash patterns can be easily edited. Along with the brushes and line patterns, it is possible to define both the ECF (Extended Colour Fill) patterns built into the computer, and a range of more interesting fill patterns provided by Imagery itself. There is also a set of editable graduated fills with numerous options. Up to sixteen colours can be used in each graduated fill, and there is a range of preset fills. The fills can be set to go in various directions, and can be either uniform or dithered.

One of the most powerful features of Imagery is its ability to set any of its colours to be transparent. This is different to the *mask* colour in Paint: it means that the colour will be unaffected by any operation you perform on the picture, so you can easily edit an object in your picture without disturbing its background. If you do make a mistake, there is an Undo facility (which can be turned off if not required), and a set of four *image banks* where you can store temporary copies of your pictures. Any outline font can be used, although I found that the font menu became corrupt (in my version) after a certain number of fonts were made available. Imagery also provides full control over the font manager's *FontMax* settings.

Aside from the basic painting facilities so far mentioned, there are some more complicated manipulation tools which allow you to copy, move, rotate and scale parts of the picture. There is a pixel mapping facility which allows any area with four vertices to be mapped onto any other area defined by four vertices. Transparent colours are not included in the process, so more irregular shapes can be given the same treatment. However, the tool which is most fun to use is *Wobble*.

By specifying a trigonometric formula along with various other parameters, it is possible to create a wide variety of weird and wonderful effects, as the Wobble tool maps a rectangular portion of the picture along the specified function. This is excellent for creating watery effects, as demonstrated in the tutorial.

Imagery is described as being two programs in one: a painting package and an image processing utility. The latter tools form a *Special* menu, and broadly fall into the following categories: colour smudging and blurring; colour tinting and modification of colour composition; coloured area to grey scale or single-colour scale conversion; contrast control; posterisation; pixelation; colour replacement; and a filter control for removing *noise*. There are also a couple of more minor functions which seem somewhat out of place in this menu, such as a *frame* tool which simply creates a box of a specified size.

Most of the image processing tools work over a definable rectangular area, but some of the tools will also work as brushes, with definable shapes as before. All the tools do their job and work acceptably quickly.

Imagery can save its pictures either in sprite form or as compressed files in its own format. Sprites cannot be directly loaded as such, but instead must be pasted on top of a (perhaps blank) existing picture. During this process, the sprite can optionally be scaled to fit the window, or can be repeated in a matrix across it (tiled).

The Wobble Tool

CRITICISMS

Aside from the bug in the font menu, Imagery performed perfectly well. I did not like all aspects of its presentation, and despite its boasts of being fully Desktop compliant, it does not follow all the Acorn guidelines for presentation, and has (for me) a few annoying features, such as always asking if you are sure when you want to quit, even if you have no unsaved work. Also, the on/off switches in dialogue boxes do not toggle, but are switched on with Select and off with Adjust, which will be confusing to new users. However, these are minor points.

Imagery did not live up to all my expectations due to more important considerations than these. The advertising claims that Imagery is equally at home both

Archimedes Software

SparkFS

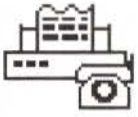
Gives you room to expand!

SparkFS is a new compressed filing system that lets you fit more on your discs. Programs work as normal, but files take up less space.

- Reads ARJ, ArcFS, SEA/PKarc, PackdDir, Spark, Zoo, Zip, LZH, Tar, Packit, Stuffit and Compactor archive files.
- Writes SEA/PKarc, Tar, Zip and Spark archive files. Zip files can be used on other machines and retain attributes.
- Modular design means you only need to load pieces you want. Scrap files can be in RAM or on disc and won't fragment memory
- DES data encryption to password protect your files. Supports UUcode, HQX, AtoB, FCET, Boo and UNIX Compress
- New features in v1.18. Image filing system on RISC OS 3. Zip Deflation. Full LZH support. Fast Zip loading. ArcFS conversion to Spark format.

SparkFS with manual and case is £23.96 inclusive.

(Upgrades, owners of Spark and ArcFS, can deduct £5.99 each)



ArcFAX - Class 2 Fax modem program

Allows sending and receiving faxes from the desktop using a suitable Fax modem. Received faxes can be saved as sprites. Faxes are sent by printing in the usual way. Script language, telephone directory, scheduling, received image processing. Works with SupraFax, TwinComm, Dynalink, Pace Microlin, Quicktel etc.

ArcFAX with manual and case £23.96 inclusive.

Communications Packages

The best Archimedes communications software matched up with good quality fax/data modems at attractive prices. e.g. the Pace Microlin FX V22bis/V42bis pocket fax/data modem £250, with ArcFax £270, with Hearsay £290, with both £310 (all inclusive prices) Please send for communications leaflet containing full details.

Disc 2 - MicroSpell 3.XX New Desktop Spell checker

Provides all the features possible in a stand alone spelling checker. Check files, check text in icons, continuous spell check whilst you type, display and correct last error. Edit dictionary. Multiple dictionaries. Supplied with 200,000 words. Fast.

(Upgrades, owners of MicroSpell 1.XX and 2.XX can upgrade for free)

Disc 33 - Panorama. Your window on the World!

180,000 coordinates outlining the lakes, rivers, continents, state boundaries etc. of the World and a program that can produce Draw files from them. You can make maps of any part of the world and then use them in DTP etc. programs. Includes the positions of nearly 1000 cities. Simple, cylinder, Mercator & perspective projections.

Disc 7 - Chess

A Chess program that takes full advantage of RISC OS, running on the desktop in a window. You can work with other programs whilst you play Chess. Many features, computer play, hint, save games, edit etc. BAU Oct '92 said "Chess costs much less and plays better (than Cyber Chess)".

Discs cost £5.99 each. Buy four get fifth one free!

David Pilling, P.O. Box 22, Thornton Cleveleys, Blackpool. FY5 1LR. UK.

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as a quality image originator and as an image enhancement tool for scanned or digitised images. Whilst the first claim is perfectly valid, the second is more questionable. I will qualify this in a moment. The advertisement also claims that Imagery takes over where Paint leaves off, which to me implies that it has, at the very least, all the facilities of Paint. This is also not true. In that respect Imagery is nothing more than a mode 15 art package. As such it performs very well, but the advertising misleads us into thinking that it is much more than this.

As I mentioned earlier, I was initially surprised that I was not able to create a sprite of whatever dimensions and mode I wanted: I had thought that there must be a way to do it, but in fact there isn't. Although you can export areas of a picture in sprite format, the only type of sprite that can actually be created is a 640x256 pixel mode 15 screen. You are also limited to one sprite per file. Thus, Imagery can never replace Paint for creating sprites in other modes, or editing files of sprites for use, say, in applications is also impossible.

As for the image processing facilities, there is nothing wrong with them as such; it's just that they are not really suitable for use with images from scanners and many digitisers. After all, the average scanner will produce images in modes 18 to 21, and the size of the image produced is highly unlikely to correspond to the size of a mode 15 screen. In order to get the scanned sprite into Imagery, you will probably have to lose a lot of detail, and unless you happen to be using an expensive colour scanner, your image will be grey-scale anyway, so Imagery's colour processing options are of little use here. The case for using Imagery with a digitiser is much stronger, as some digitisers do produce images in mode 15. Even so, I am not convinced that Imagery is the best processing software for these images. Certainly it can be very good for special effects, but the only really practical tool for ordinary use is the noise removal filter.

The only significant advantage that Imagery has over other image processing software is that the processes can be carried out over some areas of the picture and not others. Quite aside from these considerations, there is another factor involved. Just a year ago, Archimedes World carried on its cover disc an art application called Archrome. Whilst experimenting with Imagery I had certain feelings of deja vu, and after looking at Archrome again, not only did I find that both programs were by the same author, but in terms of their facilities, Imagery really does not have a great deal more to offer. Admittedly there are far fewer bugs in Imagery than there were in Archrome, and there will at least be upgrades for Imagery users; however, I cannot help but feel that £90 is rather on the steep side (to say the least) for what is little more than an upgrade to a program on a £2.95 magazine disc.

CONCLUSIONS

If Imagery cost £30, and was advertised simply as an art package with some clever image processing facilities, I would have no quibbles with it at all. If all you want is a mode 15 painting package which will multi-task on the Desktop in any mode, then Imagery performs admirably. The image processing facilities are very good as extensions to the painting facilities provided: for instance, the wet brush produces a really excellent water-colour effect, and many of the other facilities are great for creating interesting and artistic effects.

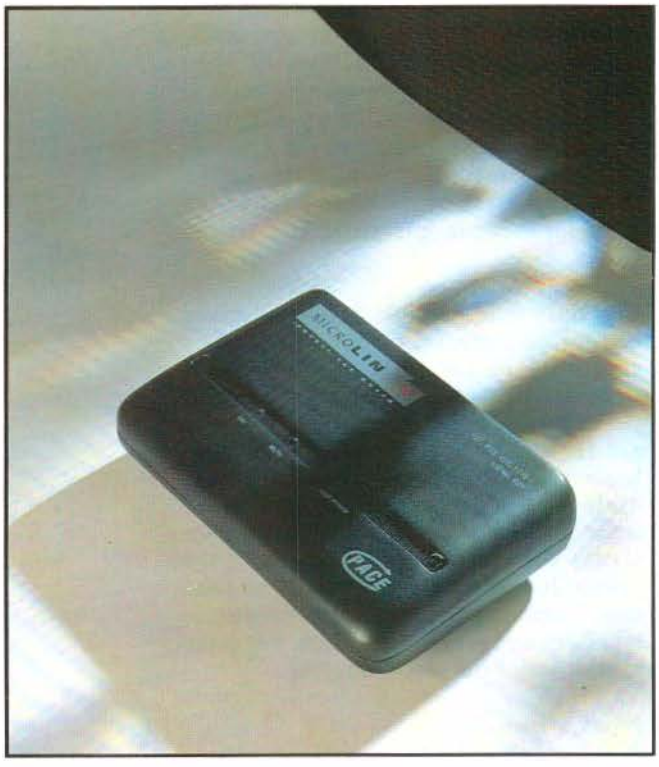
Certainly it is possible to use digitised images as a starting point for artistic creativity in Imagery, and no doubt computer artists will find many uses for its clever facilities. However, as an essential aid for the average desktop publisher, Imagery is a non-starter, and it is virtually useless for processing images from scanners. The misleading advertising even claims that Imagery supports RISC OS printer drivers: in fact, if you want to print from Imagery, you have to save the picture into Paint and print it from there. I'm going to stick with Paint and ChangeFSI.

Product *Imagery*
Supplier *Palette Studio*
6c Belgic Square,
Peterborough,
Cambridgeshire PE1 5XF.
Tel. 0923 894355 (for orders)
Price *£89.95 inc. VAT*

Floppy Fax

Alan Wrigley reviews a piece of software which turns your modem into a fax machine

ArcFax from David Pilling is an ingenious piece of software that will turn any Acorn RISC computer and an appropriate modem into a group 3 fax machine. In this review I will look at ArcFax itself, and also at a pocket modem from Pace which will be of particular interest to users of portable computers such as the A4.



The Microlin FX pocket fax modem

ARCFAX

ArcFax comes on two discs. The first contains the application itself with all necessary resources such as printer drivers, system modules etc. The second disc contains a large number of archived pictures for use as fax headers, plus Impression and Ovation page templates. A slim manual completes the package.

Installing *ArcFax* is relatively simple. You can configure a number of parameters such as baud rate, number of re-tries, the font to be used for text and so on. This is all easily done from a window. You can also compile a telephone directory, giving each number an identifying name. This makes life very easy when it comes to sending a fax - all you do is click on *Roger* or *Acorn* rather than having to remember and type in the number.

SENDING FAXES

To send a fax, you first print to a file in ArcFax's TX batch directory using the standard RISC OS printer drivers. A driver is supplied for RISC OS 2, as well as a printer definition file for RISC OS 3 which will allow ArcFax to work with the printer manager. I was pleased to see that the software was fully RISC OS 3 compatible in this respect, since swapping between *Printers* and RISC OS 2 drivers to print from different applications is a nuisance. I was also pleased to find I could print directly from DeskEdit complete with italics, bold etc.

Once the file is in the directory ready for transmission, you open a *schedule* window by double-clicking on it. A menu of your telephone directory names is available; choosing any of these adds the name to the list of future recipients. Thus you can easily send a fax to several people with no more than a few clicks of the mouse. You can even delay the sending of any entries in the schedule until after a specified time, to take advantage of cheap phone times, for example. Closing the schedule window activates the transmission process and the fax is sent, with the process repeated for all the entries on the schedule.

RECEIVING FAXES

ArcFax can be set up to answer calls automatically and detect a fax machine on

the line, or it can be switched in while online. Incoming faxes are stored in the RX batch directory; double-clicking on the file icon displays the fax on the screen. It can be rotated, scaled, printed or saved as a sprite.

Both outgoing and incoming faxes are stored by ArcFax as TIFF files, which means that they can be exported to, and processed by, a wide range of software on other computer systems, as well as by native RISC OS image manipulation applications such as *ChangeFSI*.

SCRIPT LANGUAGE

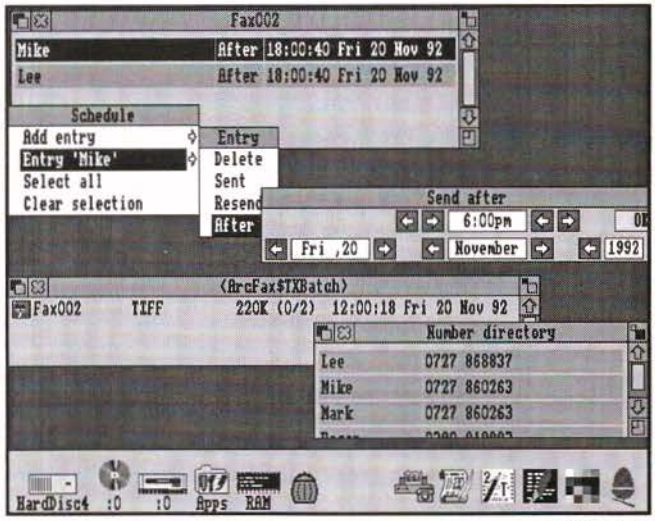
Part of the manual is taken up with a description of the ArcFax script language, which is based on C (though you don't need to be a C programmer to use it), and allows you to access some of ArcFax's functions from your own programs, and to write modem drivers for non-standard modems. There are also a number of SWI calls documented.

MODEMS

ArcFax requires a Class 2 fax modem in order to operate. This type of modem is now becoming widely available, and has an extended set of Hayes commands to enable it to send and receive faxes. This means, of course, that you can use it as an ordinary modem for all normal comms work as well as for faxes. In fact, ArcFax will happily sit on the icon bar alongside Hearsay, allowing you to switch between the two applications at will.

There are a number of non-approved modems on the market, but one which is BABT approved and will be of interest to many Acorn users is the Pace Microlin FX. This is a truly portable pocket-sized modem (120 x 80 x 25mm) which will run from either a single PP9 battery or from a mains adaptor which is supplied. All the usual baud rates up to V22bis (2400) are supported, plus group 3 fax up to 9600 baud. Its small size and battery operation make it particularly suitable for use with the Acorn A4 portable computer.

A useful feature of the Microlin FX is a wide range of sophisticated error correction protocols (for the technically minded, MNP 2,3,4,5,10 and CCIT V42). This should allow good reception on poor lines, and should result in less loss of data overall.



ArcFax in operation, showing the schedule window, the TX batch window, and the telephone directory

CONCLUSIONS

As far as modems are concerned these days, they either work or they don't. Gone are the days when a modem bristled with knobs and switches - as long as it responds to Hayes commands, everything is done by the software. Certainly the size of the Microlin FX makes it an attractive proposition, and it offers a specification that would have been unimaginable at the price a few years ago.

ArcFax will almost certainly be perceived as a competitor to Computer Concepts' *FaxPack* (reviewed in RISC User 5:6), so it is worth making some comparisons between the two systems. Both naturally produce faxes of outstanding quality at the other end of the line, since in both cases the fax is generated directly by the computer and not scanned as in a conventional fax machine. FaxPack is slightly simpler to use when sending single faxes, as you print directly rather than via a file. You can also embed the recipient's telephone number in the text, and the

status display while transmitting is more informative. However, the method of operation chosen by ArcFax allows you to specify multiple recipients and time delays, neither of which is possible with FaxPack. I also like the fact that ArcFax works with the RISC OS 3 drivers and that text printing styles come out correctly (I've never managed to get CC's Epson emulation to work properly).

The fax viewing facilities are very similar between the two applications, though FaxPack allows you to dump the fax to a printer in the background while it is being received, while ArcFax stores its faxes in a format which can easily be transferred and processed elsewhere.

ArcFax compares favourably on cost, even if you have to buy the modem as well, and of course the modem can be used for other comms work too. FaxPack, on the other hand, has the file transfer and answering machine facilities (which we hope to look at in a forthcoming issue).

Ideally I would like to have both applications available (though it would be nice if FaxPack could print through the RISC OS 3 drivers). Both have their good points and I find it difficult to choose between them.

Product *ArcFax*
Supplier *David Pilling*
PO Box 22,
Thornton Cleveleys,
Blackpool FY5 1LR.
Price *£23.96 inc. VAT.*
(£270 inc. VAT with Microlin FX)

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Desktop File Translator

by Mark Moxon

The Desktop File Translator given here enables certain codes in text files to be expanded into alternative characters or strings. A good use for this would be for converting text files for use with DTP packages. The listing given here converts DeskEdit files into Impression text files, keeping the style information intact. For example, the DeskEdit code for Italics On is 130, and this is translated into the string:

```
{font Trinity.Medium.Italic}
```

which tells Impression to switch to the default italic font. The application can be tailored for your own purposes, as described below.

Please note that this listing requires the complete Wimp Function/Procedure Library, up to and including part 5 (last month). If you do not have the relevant issues of RISC User, it is provided in its entirety on this month's magazine disc.

CREATING THE APPLICATION

To build the application, create a directory called !Translate, and open it by double-clicking on it while holding down Shift. In this directory save the following:

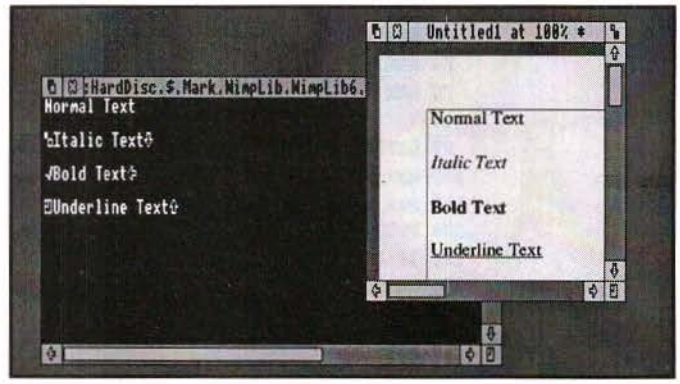
- An Obey file called *!Run* containing the following lines:

```
WimpSlot -min 64K -max 64K
Set Translate$Dir <Obey$Dir>
Run <Translate$Dir>.!RunImage %*0
```

- The listing given here, saved as a Basic program named *!RunImage*.
- A sprite file containing a mode 12, width 34, height 17 sprite called *!translate*, saved as *!Sprites*.
- The complete Wimp Library, saved as *WimpLib*.

USING THE TRANSLATOR

Running the application installs an icon on the icon bar, with a menu containing two items: a greyed-out Save entry, and a Quit entry (which terminates the application). Dragging a text file to the icon bar will load that text file and a beep will be heard; the Save option will no longer be greyed out, and now leads to a standard save box. The text file can be saved using the standard methods, and if it is dragged into an application which supports RAM transfer, then the file will be saved using that method (i.e. scrap files on disc are not used).



The Translator in use

The saved text file will be similar to the text file dragged to the icon, except that certain special characters will have been replaced by certain characters or strings. If you look at the end of the listing, there is a set of DATA statements. Each DATA statement contains a number and a string, signifying that each occurrence of the character with that ASCII code will be transformed into that string. In the program given here, the statements are set up for DeskEdit to Impression translation. The DATA statements can be edited freely to create any kind of byte-to-string replacement you want: the only proviso is that the very first DATA statement contains the number of

pairs given. For example, you could tailor the application to convert single byte codes into printer escape sequences.

One point to note with this application is that there are two buffers set up to hold the original text file and the transformed text file. The sizes of these buffers are set up in lines 100 and 110. If larger files are to be used, these values should be changed. This method is necessary because in RISC OS 2 the Basic END= construct (which should reserve memory by expanding the WimpSlot) does not work within any kind of loop - rather limiting in Wimp programs when everything is inside the Poll loop! The END= construct works in RISC OS 3, and is the preferred method for grabbing extra memory in Basic Wimp programs.

```
  10 REM            >!RunImage
  20 REM Program    File Translator
  30 REM Version    A 1.0
  40 REM Author     Mark Moxon
  50 REM RISC User Jan/Feb 1993
  60 REM Program    Subject to Copyright
  70 REM            Not Public Domain
  80 :
  90 LIBRARY "<Translate$Dir>.WimpLib"
 100 max_infile_length%=10000
 110 max_outfile_length%=10000
 120 PROCinit
 130 IF FNlibrary_version<50 THEN ERROR
 255,"Out of date version of Wimp Librar
y"
 140 icon%=FNicon_bar_icon(block%,"!tra
nslate",-1)
 150 mask%=FNpoll_flags(1,1,1,1,0,0,1,1
,0,0,0)
 160 REPEAT
 170  PROCpoll
 180 UNTIL quit%
 190 SYS "Wimp_CloseDown",task%,&4B5341
54
 200 END
 210 :
 220 DEF PROCinit
 230 ON ERROR PROCerror("")
 240 quit%=FALSE:firstsave%=TRUE
 250 DIM block% &1000,eblock% &100,tblo
ck% &1000,menu% &100
 260 DIM decode% &100,ind% 500,ind1% 5
 270 DIM infile% max_infile_length%,out
file% max_outfile_length%
 280 task_name$="File Translator"
 290 SYS "Wimp_Initialise",200,&4B53415
4,task_name$ TO ,task%
 300 $ind1%="A~ "
 310 wflag%=FNwindow_flags(0,0,1,0,0,0,
0,1,1,0,0,0,0,0,0,0)
 320 tflag%=FNtitle_flags(1,0,1,1,0,0,0
,0,0)
 330 save%=FNcreate_window(block%,400,5
68,246,168,246,168,0,0,"Save as:",2,wfla
g%,0,0,-1,tflag%,7,2,7,1,0,0,3,0,0,0,1)
 340 iflag%=FNicon_flags(1,0,1,1,1,1,0,
0,0,0,0,0,9,1,0,0,0,7,12,0)
 350 iok%=FNcreate_icon(block%,save%,19
2,112,46,48,iflag%,"OK",0,0,0)
 360 iflag%=FNicon_flags(1,0,1,1,1,1,0,
0,1,0,0,0,15,0,0,0,0,7,0,0)
 370 ifname%=FNcreate_icon(block%,save%
,10,112,176,48,iflag%,"TextFile",ind%,in
d1%,499)
 380 iflag%=FNicon_flags(0,1,0,1,1,0,0,
0,0,0,0,0,6,0,0,0,0,7,1,0)
 390 ispr%=FNcreate_icon(block%,save%,7
8,20,64,70,iflag%,"file_fff",0,0,0)
 400 PROCinit_menu(menu%,width%,end%,"T
ranslate")
 410 send%=end%
 420 PROCst_menu_item(menu%,width%,end%
,"Save",0,0,1,0,save%)
 430 PROCst_menu_item(menu%,width%,end%
,"Quit",0,0,0,1,0)
 440 swidth%=width%
 450 READ findno%
 460 DIM replace$(findno%)
 470 find$=""
 480 FOR loop%=1 TO findno%
 490  READ char%,replace$(loop%)
 500  find$+=CHR$(char%)
 510 NEXT loop%
 520 ENDPROC
 530 :
 540 DEF PROCerror(er$)
 550 LOCAL temp%
 560 IF er$="" THEN
 570  IF FNwimperror(eblock%,ERR,REPORT
$+" (internal error code "+STR$(ERL)+")"
,task_name$,0,1)=2 THEN $eblock%="TASK":
SYS "Wimp_CloseDown",task%,!eblock%:END
 580 ELSE
 590  temp%=FNwimperror(eblock%,255,er$
,task_name$,1,0)
 600 ENDIF
 610 ENDPROC
 620 :
 630 DEF PROCpoll
 640 SYS "Wimp_Poll",mask%,block% TO re
ason%
 650 CASE reason% OF
 660  WHEN 2:SYS "Wimp_OpenWindow",,blo
ck%
```

```
  670  WHEN 6:PROCmouse_click
  680  WHEN 7:PROCend_dragsave(block%,sa
ve%,ifname%,&FFF,outfilelen%-1)
  690  WHEN 8:IF !block%=save% AND block
%!24=13 THEN PROCquicksave(block%,save%,
ifname%,task_name$)
  700  WHEN 9:PROCmenu_selection
  710  WHEN 17,18:PROCmessage
  720  WHEN 19:SYS "OS_File",6,block%+44
:PROCerror("Data transfer failed: Receiv
er died")
  730 ENDCASE
  740 ENDPROC
  750 :
  760 DEF PROCmouse_click
  770 CASE TRUE OF
  780  WHEN block%!8=2 AND block%!12=-2
AND block%!16=icon%:PROCdisplay_bar_menu
(menu%,2,0,!block%)
  790  WHEN block%!8<>2 AND block%!12=sa
ve% AND block%!16=iok%:PROCquicksave(blo
ck%,save%,ifname%,task_name$)
  800  WHEN (block%!8 AND &50)>0 AND blo
ck%!12=save% AND block%!16=ispr%:PROCsta
rt_dragsave(block%,save%,ispr%)
  810 ENDCASE
  820 ENDPROC
  830 :
  840 DEF PROCmenu_selection
  850 LOCAL adjust%,select1$
  860 SYS "Wimp_DecodeMenu",,menu%,block
%,decode%
  870 first$=FNfirst($decode%)
  880 IF first$="Save" THEN PROCquicksav
e(block%,save%,ifname%,task_name$)
  890 IF first$="Quit" THEN quit%=TRUE
  900 ENDPROC
  910 :
  920 DEF PROCmessage
  930 CASE block%!16 OF
  940  WHEN 0
  950   quit%=TRUE
  960  WHEN 2
  970   newfile$=FNmessage_datasave(bloc
k%):IF newfile$<>"" THEN PROCchange_icon
(block%,save%,ifname%,newfile$)
  980  WHEN 3
  990   PROCloadack
 1000   IF block%!40=&FFF THEN PROCloadf
ile(FNzero_string(block%+44))
 1010  WHEN 6
 1020   IF firstsave% THEN source_buffer
%=outfile%:bytes_left%=outfilelen%-1
 1030   firstsave%=FNmessage_ramsave(blo
ck%,task%,source_buffer%,bytes_left%)
 1040   IF firstsave% THEN SYS "Wimp_Cre
ateMenu",,-1
 1050  ENDIF
 1060 ENDCASE
 1070 ENDPROC
 1080 :
 1090 DEF PROCloadack
 1100 block%!12=block%!8
 1110 block%!16=4
 1120 SYS "Wimp_SendMessage",17,block%,b
lock%!4
 1130 ENDPROC
 1140 :
 1150 DEF PROCsave(file$)
 1160 IF FNleaf(file$)="" THEN PROCerror
("Bad filename: "+file$):block%!36=-1:EN
DPROC
 1170 SYS "OS_File",10,file$,&FFF,,outfi
le%,outfile%+outfilelen%-1
 1180 SYS "Wimp_CreateMenu",,-1
 1190 ENDPROC
 1200 :
 1210 DEF PROCloadfile(infile$)
 1220 SYS "Hourglass_On"
 1230 PROCchange_icon(tblock%,save%,ifna
me%,infile$)
 1240 SYS "OS_File",12,infile$,infile%,0
 1250 SYS "OS_File",17,infile$ TO ,,,,in
filelen%
 1260 PROCprocessfile
 1270 width%=swidth%:end%=send%
 1280 PROCst_menu_item(menu%,width%,end%
,"Save",0,0,0,0,save%)
 1290 SYS "Hourglass_Off"
 1300 VDU 7
 1310 ENDPROC
 1320 :
 1330 DEF PROCprocessfile
 1340 outfilelen%=0
 1350 FOR loop%=infile% TO (infile%+infi
lelen%)
 1360  match%=INSTR(find$,CHR$(?loop%))
 1370  IF match%<>0 THEN
 1380   $(outfile%+outfilelen%)=replace$
(match%)
 1390    outfilelen%+=LEN(replace$(match%
))
 1400  ELSE
 1410   ?(outfile%+outfilelen%)=?loop%
 1420   outfilelen%+=1
 1430  ENDIF
 1440 NEXT loop%
 1450 ENDPROC
 1460 :
 1470 DATA 6
 1480 DATA 128,{font Trinity.Bold}
 1490 DATA 136,{font}
 1500 DATA 131,{underline 1}
 1510 DATA 139,{underline}
 1520 DATA 130,{font Trinity.Medium.Ital
ic}
 1530 DATA 138,{font}
```

Into the Arc:
Understanding Configure

Your guide: Mike Williams

With this issue of RISC User, our series entitled **Into the Arc** *changes direction. To be more precise, the series returns to its starting point, with the intention of featuring articles specifically geared to the needs of new and recent purchasers of Acorn systems. In these articles we will try to explain many of the basic concepts of using the sophisticated Desktop environment which the Archimedes range of computers provides. Much of this knowledge will eventually become second nature to you, but progress can seem painfully slow, if your experience of computers is limited.*

We want these articles to be down to earth and of real practical help to such users. We will try to explain any jargon as we go along, and to explore to some extent the principles which may lie behind what you see. Understanding ***why*** *something is needed often helps in remembering how to use it.*

All articles in **Into the Arc** *from now on will refer to RISC OS 3.10, as this is now the version of the operating system on all new and upgraded machines. Apart from that, everything covered will be relevant to all systems, the older A310 and A400/1 series, the newer A3010, A3020, A4000 and A5000, not forgetting the very popular A3000, and the portable A4. As a result, even more experienced users who have recently upgraded to RISC OS 3.10 on their machines may find information of help to them too.*

We would also welcome any feedback from newer users of Acorn RISC computers, to tell us whether we are addressing their problems, and because we would like to know of any other difficulties which you encounter, where the solution may be of interest to others.

To relaunch the second series of Into the Arc I propose to take a look at the Configure application which you can use to determine all manner of settings for when your system starts up.

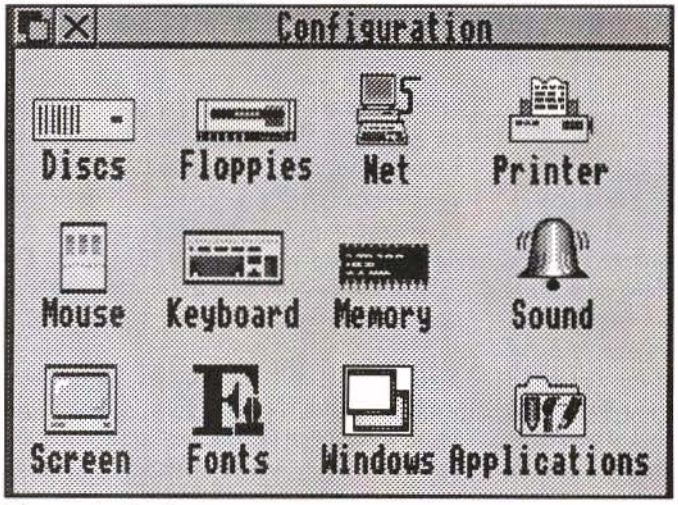
Machines like those in Acorn's 32-bit range are fitted with an additional battery-backed memory. This means that any information stored in this area of memory will be retained even when your machine is switched off. It is this which is used to store your choice of start-up settings for when you first switch it on.

Although your computer is supplied with largely sensible factory defaults, the same settings will not suit everyone's needs, nor every configuration. It is thus useful to know how to change these settings and moreover understand the basis on which decisions can be made.

Any changes you make will normally take effect immediately, so care is needed with some options which might interfere with other tasks you have in hand. It is even conceivable that you might reconfigure your machine into an unusable state! The answer is to make sure that you have saved the current settings (and any other work) before you attempt to make any changes. Of course, when you become more experienced with your system you will find other ways of coping with this situation and most users, in all honesty, probably don't bother saving the current settings when making changes. However, it is probably worth keeping a copy of your settings in case of battery failure.

To help in reconfiguring your machine Acorn has provided the *Configure* application. This is one of the built-in tools to be accessed via the *Apps* icon on the icon bar. Click with the Select button over this icon and a window will appear showing, among others, the Configure application (as with all RISC OS applications the application name is preceded by a '!' in the directory display - however, we write the application's name without the '!' e.g.

Draw, Edit, etc.). Double-clicking (with the Select button) on the Configure application will install it on the icon bar.



The main Configure window

If you want to save the current settings for your machine you should first make sure you have opened the directory display for the directory you want to use. I suggest you choose an obvious name for this directory, like *Settings*. To save the settings, click with the Menu button over the Configure icon on the icon bar, and you will see a menu with a Save option. Follow the arrow to the right and a so-called *Save Box* will appear.

Next, you need to specify the name you want to use for the file in which these settings are to be stored. You will see that by default it is set to *Configure*. The red caret at the end of this name indicates that any keyboard input will go into this position. To replace the default with an alternative name, press Ctrl-U to clear the space and then type in a name of your choice (e.g. *OldSet1* - such a name easily caters for further savings by changing the number at the end of the file name).

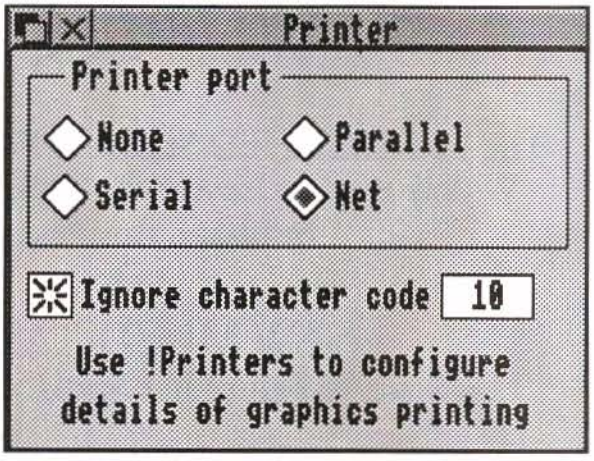
To use any settings previously saved, all you need to do is to double-click on the settings file in a directory display. This will automatically load the Configure application on to the icon bar at the same time so you will need to quit from this to get rid of it again.

CONFIGURE OPTIONS

If you click (with Select) over the Configure icon on the icon bar, a window will open on the screen showing the items which can be changed. Clicking on any of these will open a further window where you can change the corresponding settings.

DISC DRIVES

The *Discs* and *Floppies* options allow you to specify the numbers of such disc drives fitted to your system and for hard discs what type. Of these, the ST506 was fitted to early models of the Archimedes (A400/1 series in particular). Subsequently SCSI drives were popular and fitted as upgrades to various systems including the A3000 (as an external drive), and the A540 is still supplied with a SCSI hard disc system.



The Printers dialogue box for selecting printer port

All current Acorn hard disc models (apart from the A540) are fitted with IDE drives and these have proved very popular as add-ons for other machines, particularly the A3000 where the small size allows the drive to be fitted internally. You are unlikely to need to make changes other

than when first configuring your system or on fitting an additional disc drive as an upgrade. You should make sure that you do not have any directory displays or files open if you do want to change these settings.

PRINTERS

The *Printer* option is one you might need to change, but again once set correctly is unlikely to need further attention. This setting determines which interface is to be used for your printer if you have one. Most printers use the *parallel* port - this is the large multi-pin connector on the back of your machine. Some printers use the serial port, but this will nearly always be slower. Some printers support both, but if you have a choice, always go for the parallel port. If you happen to be using a machine connected to a network then there may be a network printer you can access, but in that case whoever is responsible for the network can advise you on this and other network settings.

The *Ignore character code* setting is one which can cause confusion, and this is made worse because printers frequently allow you to configure the printer in different ways too. The best solution is to set your printer so that when it receives a Return character from your computer it automatically adds a linefeed character to move the paper up one line, and use the default setting in Configure. The RISC OS 3 User Guide tells you more about this in case of trouble.

Well, space soon runs out, and this is where we must pause for now. Next month I will finish looking at Configure, but if there are any topics you would particularly like to see covered in this column then do write and let us know.

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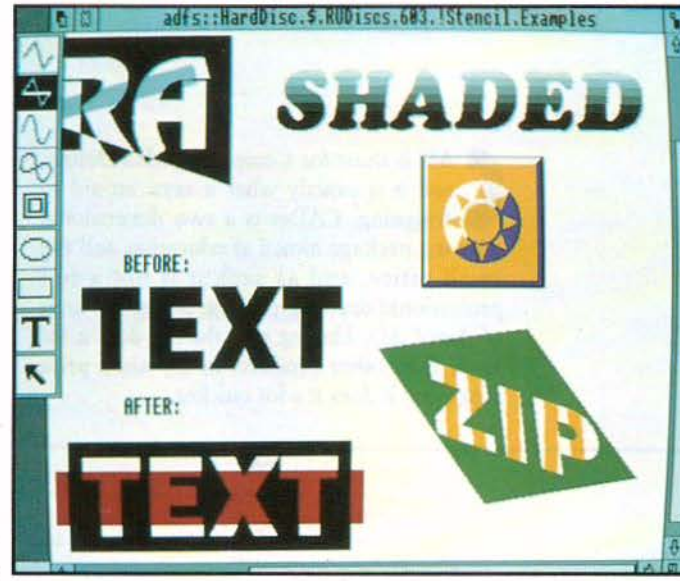
Serious Statistical Software, Lynwood, Benty Heath Lane, Willaston, South Wirral L64 1SD. Tel. 051 327 4268.

For reasons of space, these applications are only available on this month's magazine disc.

Stencil

by Kell Gatherer

Stencil is an application which turns a Draw path object "inside out". Effectively it creates a negative image by placing a bounding box around the outside, so that what was filled is now transparent and vice versa. The resultant file can be used for all kinds of special effects which are not available in Draw itself.



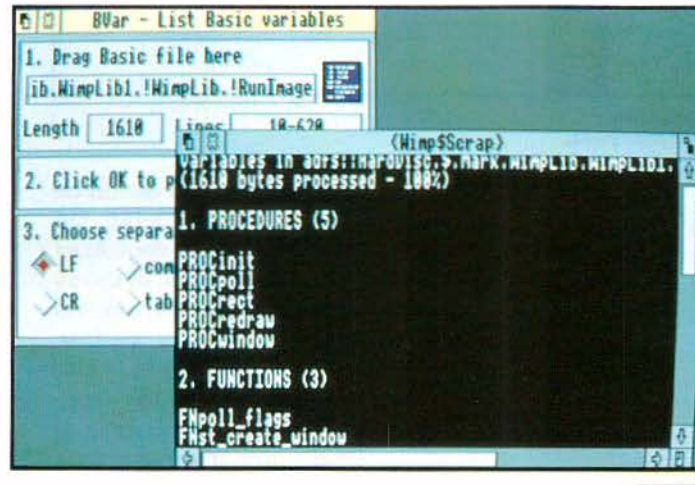
Stencil is most effective with text that has been converted to a path from a font using DrawFont or FontFX: any patterns placed behind the resultant "stencil" will show through, creating very interesting text effects. Using the application is simplicity itself: simply drag a Draw file to the icon bar icon, and a save box pops up from which you can save the inverted image.

An example Draw file is included showing the special effects that can be produced using this very simple, yet very effective application.

Basic Variable Lister

by Graham Crow

The Basic command LVAR lists a Basic program's variable names - but only if they have been declared during execution of the program. The Basic Variable Lister overcomes this limitation by searching right through the program code, identifying all variable names and classifying them by type, for export to a text editor.



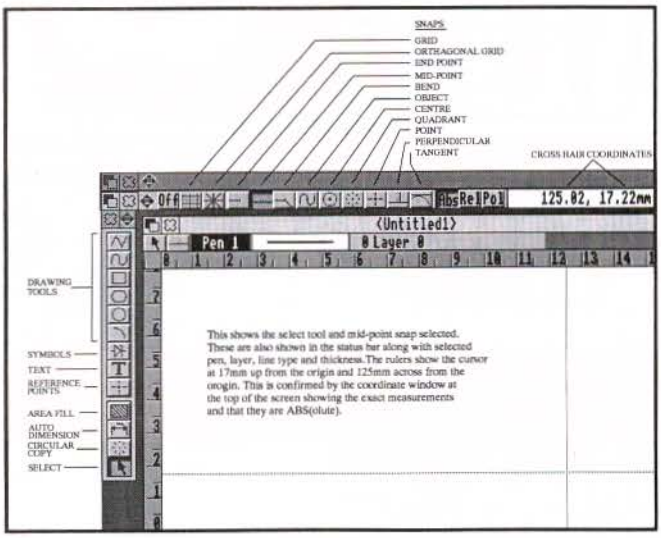
The processing is all done in the background on the Desktop, so you can continue to use the computer while a program is being analysed. The text file describing the variables can be saved and printed if required, and the list contains details of all the following: Procedures, Functions, String Variables, Resident Integer Variables, Integer Variables, Numeric Variables, String Arrays, Integer Arrays and Numeric Arrays.

All in all, a very useful application if you want to analyse your Basic programs when debugging.

CADet: Computer Aided Design

Alan Highet takes a look at Minerva's new 2D drawing package.

CAD is short for Computer Aided Design, and it is exactly what it says: an aid to designing. CADet is a two dimensional drawing package aimed at education and the small office, and as such it is not a full professional drawing package along the lines of AutoCAD. Having said that, it does a lot more than other products in the same price range and it does it a lot quicker.



CADet's mainscreen

USING CADET

CADet is fully multi-tasking and installs on the icon bar like any other RISC OS compliant package. Clicking on the CADet icon on the icon bar opens a drawing window and from there your first task will probably be to open the toolbox window, which initially appears at the left-hand side of the screen, and also the snap bar which appears at the top (see figure 1). Both of these, along with the main window and the message window (which is a thin window along the top of the screen), can all be dragged around the screen in true RISC OS fashion. Inside the main window there is also a status bar and horizontal and vertical rulers, any of which can be turned on and off.

The menu system is comprehensive, and ease of use is probably CADet's greatest asset. Most commands can be selected via menus or through the function keys, giving you the option of using the descriptive menus or the quick keyboard shortcuts.

DRAWING OPTIONS

Each of the toolbox icons and the snap icons are 3D and, when selected, click down visually, making your current selection easy to identify. The drawing options are fairly standard with straight or curved lines, rectangles, polygons, circles and arcs. All of these may be drawn freehand or various points picked and dimensions, angles and line lengths specified. Lines can be dotted, hashed or parallel, and can be of any thickness. Any area may be filled with any one of the seventeen fill patterns supplied.

The snap menu allows accurate drawings to be made. You can snap points to the grid, which can be either plain or orthogonal; other snap options are: snap to line, an object snap, a perpendicular snap, a tangent snap, a centre snap, a quadrant snap and a point snap.

As with Draw, all objects may be grouped. Once an item is grouped it can be saved as a symbol; a number of different symbols are supplied with the package. These symbols may be plotted back at any scale or angle and make for a very quick way to build up drawings. There is a also a powerful circular copy which will copy any object, no matter how complicated, around an invisible circle as many times as you specify in the dialogue box.

Text may be entered only in the four text styles supplied, and no use is made of outline fonts (which would have been nice). Auto-dimensioning is also provided, but

this can only be altered in the number of available. My only real niggle is the inability to scale the dimensions automatically, as you are limited to A3 paper size, so dimensioning building drawings has to be done by editing the dimension text.

SELECTING AND EDITING

With selected objects there are the usual options to clear, copy, move and delete, but you can also rotate, scale, fill, extend a dimension, join with another object, move to another layer or insert a break. This is a very powerful tool which lets you pick a break point in a line or circle, and is best used with one or more snaps.

Curved lines may be converted to a series of short straight lines, and an arc may be converted to a curve with Bezier control points. Neither of these conversions are reversible.

CADet can import and export Draw files, although it understandably ignores any sprites it finds. This export facility overcomes the limited text facilities of CADet because text can be changed in Draw.

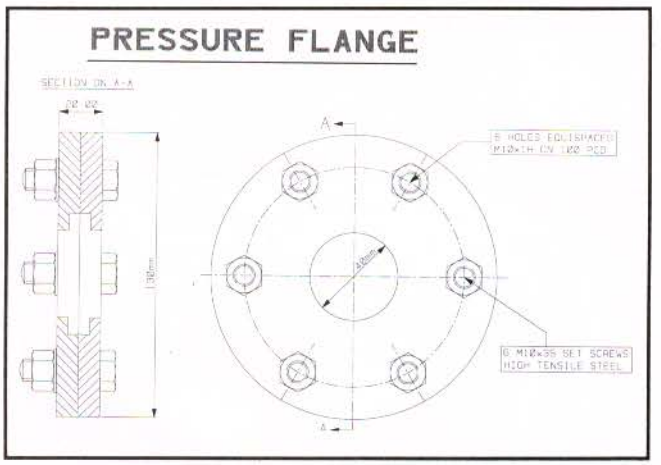
The other format that can be imported is CSV files. They have to be pairs of x-y co-ordinates with the option to add one letter signifying whether the points should be joined with a straight line, a curve or move to a new point.

Along with separate views on the same drawing there is a 16x zoom facility provided with the usual dialogue box to control it, but with the added ability to store up to 8 views by name and also the last view prior to a zoom.

CONCLUSIONS

Overall I liked the program and found it very intuitive to use, and within an hour I was producing drawings with hardly any reference to the manual. The ability to import and export Draw files was faultless, with CADet translating text to its own system font (see figure 2 for an example). The 130 page ring-bound manual takes you easily through a difficult subject and has a simple tutorial and a full reference section.

The program is supplied with a multi-tasking plotter driver to drive HPGL plotters, but drawings can also be printed using your own RISC OS drivers. The program should fit well into schools and possibly into the home, but it is not powerful enough for business. On the other hand, CADet's big brother, ProCAD, is due for release near the end of January, and I have had a brief look at a pre-release version. CADet's drawings will be fully compatible with ProCAD and there will be an upgrade path from CADet to ProCAD,



Example printout

although the price hasn't been finalised. Minerva tell me that for the first month of ProCAD's release the upgrade will be the difference in price assuming that the returned CADet package is in good order.

In the meantime, CADet does what it does very well, and with the promise of ProCAD as an upgrade, CADet looks to be a winner, despite its hefty price tag.

Product *CADet 2D drawing package*
Supplier *Minerva Software*
Minerva House,
Baring Crescent,
Exeter EX1 1TL.
Tel. 0392 437756
Fax 0392 421762
Price *£175.08 inc. VAT*

Colour Cards Compared

Lee Calcraft takes a look at two new contenders in the graphics enhancer market

Within a few weeks of each other Computer Concepts and a new company called State Machine have brought out colour enhancer cards for the Archimedes. Both cards are half-width expansion devices which can be fitted internally to an A300, 400, 540, or 5000. Assuming that you have a multisync monitor, both cards can significantly increase the on-screen resolution, and the size of the colour palette (up from 4096 colours to a massive 16 million - and thus making way for genuine 256 level grey scales). Additionally CC's card can increase the number of colours on screen from the usual 256 limit to a healthy 32,768. While the rival card cannot match this, it claims to be able to produce a similar on-screen quality by dithering at high resolutions.

CC's ColourCard gives breath taking photographic quality outside the Desktop

Both cards connect via a single flying lead (to the Archimedes genlock connector) as well as the normal expansion socket, and are relatively easy to fit. Both have two sockets at the rear, but these are used differently. State Machine's G8 card simply has two *video out* sockets - one 9-pin and one 15-pin - to cope with the two alternative types of video cable used on the Arc. CC's ColourCard on the other hand has an input socket which is connected to the video output of the Arc, plus a 15-pin video output socket which connects to the monitor.

Both boards work by replacing the Arc's video output hardware. They both use the same video processor chip and both contain half a megabyte of video RAM, which is kept updated with the output from VIDC (the Arc's video controller chip). The boards then generate their own video output at a fast refresh rate. This means that flicker is reduced, and that the computer runs significantly faster than it would normally in high resolution modes (because the ARM processor is less restricted in its access to RAM).

One major hardware difference between the two boards is that Computer Concepts' ColourCard contains a high speed analogue switch. This is used to great effect in switching all the Arc's native modes directly through to the output. One snag with the ColourCard, by contrast, is that screen updates do not occur so quickly in the new modes. In fact movements on screen will usually only be followed at around 12 frames per second in high resolution modes. This can give rise to a temporary shearing effect as windows are moved quickly around the Desktop, and obviously means that applications which rely on fast animation - such as Acorn's Replay or certain games - could not be run in ColourCard modes.

State Machine's G8 board, by contrast, retains an update frequency of at least 25 frames per second in all modes. This means that it can follow fast movements, but at the expense of a small relative loss of processor speed at higher resolutions. Another difference is that, unlike the

ColourCard, the G8 board is not able to pass native Acorn modes directly through, so that the board must emulate each of these modes; and some games which write directly to the video hardware will not work with the card enabled. Neither can it put more than 256 colours on screen at once - though the more expensive G8 Professional will be able to do this.

COMPUTER CONCEPTS' COLOURCARD

CC's ColourCard comes with a slim manual and a floppy disc which contains two applications and a set of relocatable modules. Before using the board you must load the module which most closely matches your monitor. This is necessary both for establishing which modes your monitor can cope with, and for fine-tuning frame scan times. The manual lists 31 new modes, some of which will only work on top-of-the-range monitors like the Taxan 795 or the Eizo. Four of the modes are 32,768 colour modes (15 bits per pixel), and these are not (yet) supported by the Desktop.

The remaining new modes may be used in the normal way, and can be entered either via the Desktop Palette utility as modes 96-119, or by using an excellent utility called *FlipTop*. This displays in a scrollable window a table of all available Desktop modes (normal and extended), showing both the resolution and the number of colours. Clicking on any entry selects the corresponding mode.

Without doubt, ColourCard provides a wide range of possible Desktop modes, providing very large Desktops indeed. Thus for example the 1280 x 512 pixel 16 colour mode gives a Desktop with four times as much room as the standard mode 12. This is excellent for DTP, where you could have pairs of A4 pages side by side fully visible; but you will need a very good monitor. My Taxan 770, while displaying this mode without flicker, made normal system text (as in Edit or in menu and title bars) appear out of focus. This of course is down to the dot pitch of your monitor. The smaller the dot pitch the sharper the focus (and the higher the price).

For me the most astounding thing about the ColourCard was its 15 bit per pixel modes. With these the Arc's normal limit of 256 colours simultaneously on screen is increased to 32,768. The *Clearly* application supplied with the ColourCard allows specially prepared sprites to be displayed on screen in 32,768 colours and at a resolution of 576 x 424. With an ARM3 it took only 2.6 seconds to load the 780K sprites from hard disc and display them on screen. The quality was truly staggering, evoking audible gasps from everyone who saw them: much better than anything achievable on broadcast television, and utterly stable. Viewing the screen from very close up failed to reveal any imperfection whatsoever (including individual pixels themselves - they were nowhere to be seen).

State Machine's G8 card produces good results within the confines of the desktop

STATE MACHINE'S G8 PLUS CARD

Installing the G8 involves a very similar process to that for the ColourCard. But setting up the software is a little more complex because instead of loading a module tailor-made to your monitor, you must type in a number of configure options at the command line. To do this you will need to extract data from your monitor's manual.

When you re-boot your machine with the new options set, the G8 comes into play, and you will probably find that RISC OS

now starts up in a two-colour mode. This is because State Machine are forced to replace all of the Arc's native modes with ones of their own, and have chosen (for reasons best known to themselves) to make some of them very different from their Acorn counterparts. I must admit that I found this a little annoying, since my favourite Desktop mode (mode 36) had also been replaced by a two-colour substitute.

State Machine provide an application adventurously called G8 which cunningly resides in the RISC OS Resources directory, and which looks very similar to CC's *FlipTop*. From here you can select any of the modes available with the G8 card. These are all Desktop modes, and appear to provide the same kind of range of sizes and resolutions that are offered by the ColourCard.

Native Arc	0.28 secs
ColourCard	0.21 secs
G8 Super	0.22 secs
Arc Mode 12	0.20 secs

Timings are all for 800 x 600 pixel, 16 colour modes. A comparison timing is given for native mode 12. These timings are for an ARM3 with the cache off.

Table 1. IntMath Benchmark timings

True to their claims, State Machine's G8 board has the advantage over the ColourCard that frame updates are kept high. This means that dragging windows rapidly across the screen does not result in the shearing noticed with CC's card, and that animation sequences can be followed at a rate of at least 25 frames per second.

In spite of this, the G8 card appears to relieve the ARM processor to a similar degree to the ColourCard, at least at medium resolutions. The benchmarks in table 1 give relative timings for the IntMath benchmark (integer maths calculations) performed on an ARM3 with the cache turned off in an 800 x 600 pixel 16 colour mode. Both cards turn in a performance of around 25% faster than in native mode. The savings are less noticeable with the ARM3's cache turned on because with the cache in place, even in native mode the processor is less dependent on RAM access (which is where the bottleneck lies).

State Machine's second claim however, was not fully borne out in practice. It was argued that by dithering with 256 colours, they could achieve a picture quality as good as that with a 15 bit per pixel mode. And while the images which they supplied for the review could be loaded easily into Paint in their new modes (e.g. 800 x 600 with 256 colours) for viewing on the Desktop, the quality did not match those viewed in ColourCard's 32,768 colour mode 107. Those on the G8 were good, but not astounding: even a couple of feet away from the screen, I could make out component colours of some dithered areas.

CONCLUSION

Both cards are constructed to a high standard, and perform well. Both will give you a wide range of Desktop modes with reduced screen flicker and with very little processor overhead; and both provide a 24 bit palette (16 million colours to choose from). But only the ColourCard has the ability to display more than 256 colours on screen at once, and to provide genuinely photographic quality colour, and only the ColourCard faithfully reproduces the Arc's native modes. Against this, the G8 provides a sufficiently fast frame update rate to follow animation and fast screen movements.

Product *ColourCard*
Supplier *Computer Concepts*
Gaddesden Place,
Hemel Hempstead,
Herts HP2 6EX.
Tel. 0442 63933
Fax 0442 231632
Price *£299.62 inc. VAT & p&p*

Product *G8 Plus Graphics Card*
Supplier *State Machine*
Advanced House,
Upper Wellington Street,
Luton,
Beds LU1 5AA.
Tel. 0582 483377
Fax 0582 480833
Price *£296.69 inc. VAT & p&p*

Disc File Rescuer

Matthew Astley describes a utility which may well save your life (well, your files at least).

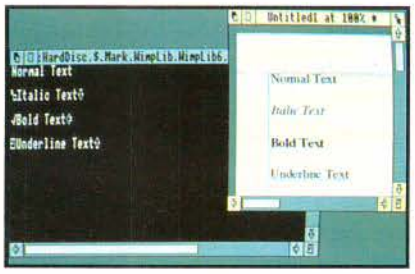
It happens to the best of us, it happens to the worst of us - it probably even happens to the rich and famous. Yes, it's the good old defective disc, and it can cause utter grief when the error message flashes up to tell you that the file which is going to make you millions has been lost in a puff of magnetic corruption.

Fret not, though, because the program given here can help if the problem is caused by a defective sector. When a file lies on a defective sector, then the contents of the file are filled with question marks on the disc, and it cannot be loaded by the Filer. However, there is a way of rescuing the rest of the data which has not been corrupted, and this is what the program given here does. Simply type it in, save it, and run it. You will be asked for the full pathname of the defective file, and the full pathname of the file to which all the rescued data will be copied, and then the program will do its best. It is a good idea to put the destination file on a different disc to the defective file, for example on a RAM disc, because if the defective disc has corrupted one file, it could corrupt again.

The program works by reading the defective file 1K at a time, and if a particular read fails, then it simply writes question marks to the destination file. Thus, when you load in the rescued data, some data will be lost. This is fine for text files, but (for example) archive files may not run at all: you have been warned!

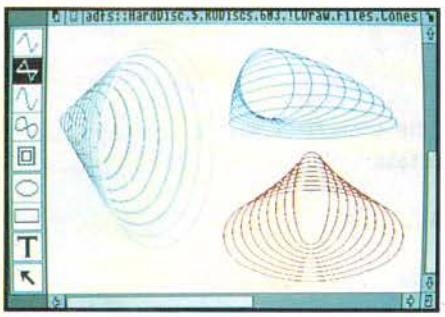
```
   10 REM            >Retrieve
   20 REM Program    Disc File Rescue
   30 REM Version    A 1.00
   40 REM Author     Matthew Astley
   50 REM RISC User  Jan/Feb 1993
   60 REM Program    Subject to Copyright
   70 REM            Not Public Domain
   80 :
   90 ON ERROR SYS "Hourglass_Smash":PRI
NT REPORT$;" at line ";ERL:END
  100 REM Load in chunks of...
  110 sect%=1024
  120 PRINT "RETRIEVE FILES CONTAINING B
AD SECTORS"'STRING$(37,CHR$175)
  130 PRINT "Enter full pathname of:"
  140 INPUT "  Object to retrieve: "f$
  150 INPUT "  Retrieved file: "r$
  160 :
  170 SYS "Hourglass_On"
  180 SYS "OS_File",17,f$ TO F%,,Lo%,Ex%
,L%,Att%
  190 IF F%<>1 THEN SYS "OS_File",19,f$,
F%
  200 F%=OPENIN(f$)
  210 DIM A% L%+8
  220 :
  230 DIM P% 64
  240 [ OPT 2
  250 .word
  260   EQUD &3F3F3F3F \ '????' = What d
efective sectors contain
  270 .fill
  280   LDR R2,word
  290 .loop
  300   STR R2,[R0],#4
  310   CMP R0,R1
  320   BLT loop
  330   MOV PC,R14
  340 ]
  350 B%=A%+L%+4
  360 CALL fill
  370 :
  380 FOR B%=A% TO A%+L% STEP sect%
  390  SYS "XOS_GBPB",3,F%,B%,sect%,B%-A
%
  400  SYS "Hourglass_Percentage",(B%-A%
)/L%*100
  410 NEXT
  420 :
  430 CLOSE#F%
  440 SYS "OS_File",0,r$,Lo%,Ex%,A%,A%+L
%
  450 SYS "OS_File",4,r$,,,,Att%
  460 SYS "Hourglass_Off"
  470 END
```

Desktop File Translator



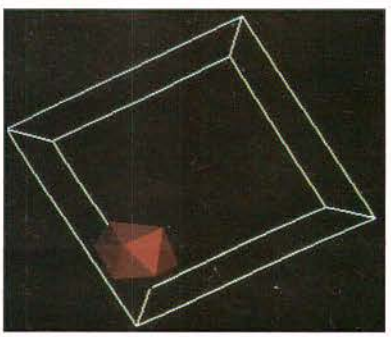
This application translates files by changing certain characters in the files into strings (or characters) specified in the program. The application, will translate DeskEdit files into text files suitable for Impression, without losing any of the style information (such as italics, bold etc.), but it can be easily customised for a variety of uses.

Creating Draw Files from Basic: Ellipses



An addition to the CDraw library to create accurate ellipses in Draw files, using Basic procedures. The complete CDraw library is included, along with five demonstration programs which use the ellipse procedure.

Jello and the Art of 3D Graphics (Part 4)



The final installment of this series makes the Jello appear as if it is made of jelly, bouncing around inside a see-through box. The source code is extensively documented, and a file is provided giving details of the complete program flow.

Disc File Rescuer

This program will attempt to rescue disc files which have been struck by a faulty sector. The program will work through the file, saving what it can, and replacing the faulty part of the file with question marks. It won't save the whole file, but it may well save enough to avoid loss of hours of work due to disc errors.

The 80 Column: PrData Files

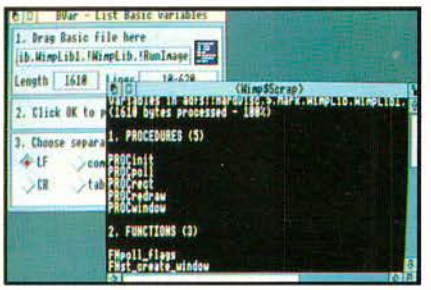
Files for use with PrinterDM (on RISC OS 2) to enable Epson-compatible printers to cope with most characters in the Archimedes set by making use of superscipt and subscript, backspacing and, where available, fractional reverse feed to create accented characters etc.

ADDITIONAL ITEMS DESCRIBED IN THE MAGAZINE

Stencil

Stencil is an application which turns a Draw path object "inside out". This simple operation can create some excellent special effects which are not available in Draw itself, such as text with patterned fills or sprites showing through the letters. Simple, but very effective.

Basic Variable Lister

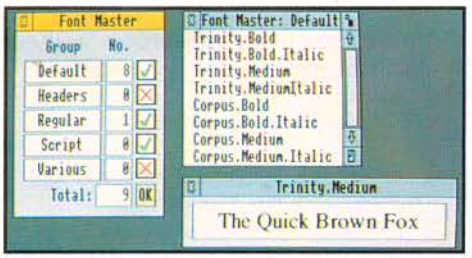


This application takes a Basic program and produces a comprehensive list of all the procedures, functions, string variables, resident integer variables, integer vari-

ables, numeric variables, string arrays, integer arrays and numeric arrays mentioned in the program. Not surprisingly, this list can be invaluable to programmers.

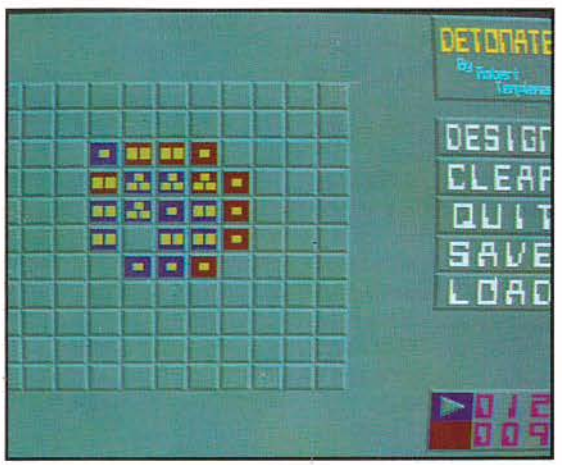
BONUS ITEMS

Font Master



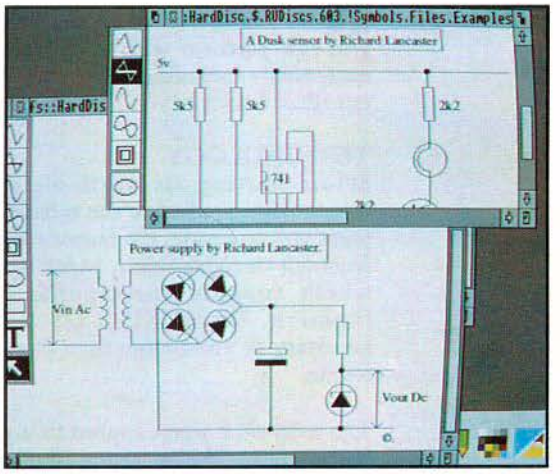
The number of outline fonts now available can cause problems with certain applications in RISC OS 2 (and some in RISC OS 3): some applications (such as RISC OS 2 Edit) simply crash if there are too many fonts, while the loading of others can take a long time as the entire font list is read in. Font Master permits your fonts to be grouped in up to five directories, with control over which are "seen" by other applications, and it also makes it easy to preview a line of text in any font.

Detonate Game



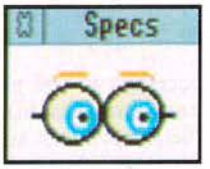
A classic strategy game in which two players compete to take control of the playing area. You build up the values of each of your playing pieces, until one piece reaches a critical value and explodes, causing a chain reaction which can completely turn the game around. Great fun, and most frustrating for the underdog.

Circuit Diagram Clip Art



A set of Draw files containing components for making circuit diagrams. This month completes the set of files, and a number of examples are included to show what can be achieved.

Spooky Specs



This novelty application displays a pair of beady eyes which keeps watch on the pointer, and beats a hasty retreat when you try to click on its close icon. Not one for the easily spooked, the expressions resulting from various mouse movements can be most amusing!

ArcScan Data

ArcScan indexes for this issue of RISC User and BEEBUG Vol.11 No.7.

This month's action packed magazine disc costs just £4.75 inc VAT.

Getting to Know your Rodent

David Spencer explores the hidden secrets of your mouse.

How well do you know the hidden secrets of your mouse? In this article we shall look at all the actions that you can perform with your humble *Mus musculus* - including all the new features introduced with RISC OS 3.

TERMINOLOGY

Before starting, its worth clarifying the terminology applied to the mouse. As most users will be aware, the buttons are labelled from left to right: Select, Menu and Adjust, which roughly corresponds to their function. Under RISC OS it is never necessary to press more than one button at a time.

The term *click* when applied to a particular button means the operation of pressing and then releasing it. *Double-clicking* indicates press-release-press-release, i.e. two clicks which must immediately follow each other. Similarly you can have triple clicks and so on. RISC OS 3 displays a double pointer during the period when a click would be taken as the second part of a double-click. The operation of *dragging* involves pressing a mouse button and holding it down whilst moving the mouse.

The following sections detail particular click and drag combinations for various window items. The terms *Select* and *Adjust* are used to indicate single clicks of the specified buttons. *Double Select* and *Double Adjust* indicate double-clicks, and *Select Drag* and *Adjust Drag* specify drag operations. *Shift* means that either Shift key must be held for the duration of the operation. The *Menu* button isn't mentioned (except in the section on the Pinboard) because its action is always the same, namely to open a menu for the window under the pointer.

It is probably best if you try out all the mouse actions for yourself whilst reading this article. You will quickly see that there is a logical arrangement to the actions and that it is not too hard to remember them all.

SYSTEM CLICKS AND DRAGS

This refers to clicks and drags on the system areas of a window such the title bar. The possible options are:

Title bar:
- Select - Bring window to front.
- Select Drag - Bring to front and move.
- Adjust Drag - Move window without bringing to front.

Back icon:
- Select - Send window to back.

Toggle icon:
- Select - Toggle between current size and full size with window at front.
- Adjust - as for Select, but doesn't bring window to front.

Size icon:
- Select Drag - Bring window to front and change size.
- Adjust Drag - As for Select but doesn't bring window to front.
  Under RISC OS 3 if the dragging is continued after the edge of the screen is reached, the window will grow in the opposite direction.

Scroll arrows:
- Select - Scroll in direction of arrow
- Adjust - Scroll in opposite direction

Scroll bars:
- Select Drag - Scroll window in direction bar is moved.
- Adjust Drag - Allow both scroll bars to be dragged simultaneously, during which time the pointer vanishes (RISC OS 3 only).

Scroll bar outers:
- Select - Scroll by one page in a direction such that the scroll bar will move towards the pointer.
- Adjust - Scroll one page in opposite direction to above.
  Note that none of the scroll actions bring the window to the front of the stack.

Close icon:
- Select - Close window
- Adjust - For Filer windows close the window and open the parent directory. For editor windows close the document and open the Filer window containing it Otherwise just close the window.

Shift Select - Iconise window onto Pinboard. (RISC OS 3 only)
Shift Adjust - As for Adjust but doesn't close window.

In the above list, an editor is any application that can load a file, display its contents and save it again, be it text, a picture or whatever.

FILER ACTIONS

For Filer windows, there are a variety of click options for each entry:

Click - Select entry and deselect others.
Adjust - Toggle selection of item without affecting others.
Double Select - Run file or application, or open directory.
Double Adjust - As for Double Select but close this Filer window afterwards.
Shift Double Select - Open directory (regardless of whether it is an application), or load file into *Edit*.
Shift Double Adjust - As above, but close window afterwards.
Select Drag - Copy file to another directory or load into application.
Adjust Drag - As Select Drag but close window as well.
Shift Select Drag - Move file to another directory. Under RISC OS 2 the file is in fact copied and the original then deleted. RISC OS 3 will attempt to rename the file if possible.
Shift Adjust Drag - As above, but close window afterwards.

Starting a drag other than over an icon will draw a rubber-band box that allows a group of files to be selected at the same time.

PINBOARD ACTIONS

Files, directories and applications pinned to the RISC OS 3 Pinboard behave exactly as if they were in Filer windows. So, for example, Shift double-clicking with Select over an application will open the application directory. The use of Adjust in any operation will remove the icon from the Pinboard.

Double-clicking on an iconised window with either Select or Adjust will re-open the window in the condition it was in before it was iconised. Clicking Menu over an iconised window whilst holding down Shift will open the menu for that window, rather than the Pinboard menu. This can be useful if, for example, you want to save an iconised document without re-opening its window.

Items on the Pinboard can be selected using clicks and drags just as for Filer windows. The selected items can then be handled using the Pinboard's menu.

SELECTING TEXT

In text editing applications it is common to have consistent mouse actions for handling text. For example, a single click will normally position the caret, a double-click selects the word under the caret and a triple-click selects the whole line. In some packages four clicks will select a complete paragraph and five clicks the entire document. It is also normal to select text by dragging with Select over the area.

NESTED OBJECTS

In applications such as Draw, where objects can be nested one above the other, there is a defined method for selecting individual items. The first click or double-click will select the top-most item under the pointer, and each subsequent click or double-click will select the next item down. If Select is used, only one item at a time will be selected, whilst Adjust can be used to select a new item without deselecting the current one.

The correct choice of mouse actions can allow you to keep the Desktop tidy. For example, opening Filer windows by double-clicking Adjust and closing them with Adjust allows you to traverse the menu tree whilst only having one viewer open at a time. This can be extended to loading of files into editors using Adjust and subsequently closing the editor's window with Adjust.

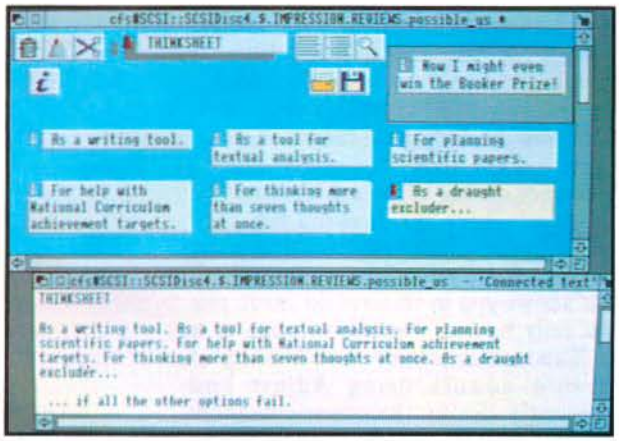
AUTOMATIC MENUS

Under RISC OS 3 it is possible to have sub-menus open automatically without moving over the sub-menu arrow. If this option is enabled through the *Windows* section of *Configure* (or by setting bit 7 of the WimpFlags setting) then whenever the pointer is held over a menu entry that has a sub-menu for a period of time, the sub-menu is opened automatically (but the pointer isn't moved). This is of particular use on the A4 portable when emulating the mouse through the keyboard, and could also be of use to users with special needs.

ThinkSheet

Reviewed by John Schild

Wonderful machine as it is, the human mind can only hold about seven items of information close enough to the surface of consciousness to be readily available. Working with a range of ideas beyond this number requires some kind of external recording and organising aid. This assertion, attributed to an impressive array of authorities quoted in the manual, is the thinking behind ThinkSheet.


THINKSHEET
How I might even win the Booker Prize!
As a writing tool.
As a tool for textual analysis.
For planning scientific papers.
For help with National Curriculum achievement targets.
For thinking more than seven thoughts at once.
As a draught excluder...
THINKSHEET
As a writing tool. As a tool for textual analysis. For planning scientific papers. For help with National Curriculum achievement targets. For thinking more than seven thoughts at once. As a draught excluder...
... if all the other options fail.

ThinkSheet and connected text displays

In structure, this application from Fisher Marriott Software is a hierarchical database program, employing logic very similar to that of the Acorn ADFS. It is described in the manual as an aid to creative thinking, and is designed to help students and writers in all disciplines to brainstorm ideas, type them into boxes within a window, move them around as required and finally output them as a text file ready for refining in a word processor. Output text may be continuous, or in list form, numbered if desired. It really is as simple as that, and writers whose approach to their craft lends itself to this kind of process will find ThinkSheet a useful tool.

PRESENTATION

Brevity and simplicity are the keynotes to the 70 page manual, as they are of the software itself; large print, copious illustrations and lots of white space make the ring-bound booklet easy reading as a brief introduction to a software package which the producers reasonably claim can be sufficiently mastered in five minutes.

The application is delivered on a single floppy disc without any kind of protection and can be copied onto a hard disc or working floppy. Double-clicking on the think bubble icon loads it to the icon bar, from whence it can be spurred into action with a mouse click. It is fully RISC OS compliant and runs without complaint on my A5000 machine, where I have it sitting as I write. Surprisingly, it grabs 416 kilobytes of RAM. There is also a PC version of ThinkSheet (which has been around for 4 years and has proved popular in schools) and a transfer utility is included on the disc.

THINKSHEET IN ACTION

Clicking with the Select button over the icon bar icon opens a new ThinkSheet window. By default, this has a blue background with a range of toolbox icons at the top. These represent cut and paste options, a waste bin, and filing and printing functions. A clipboard, simple search facility and a display as text option complete the line-up. A menu structure largely replicates all these toolbox operations. Clicking with Select over the window opens a text entry box about twenty characters wide, which grows as words are typed in. Editing facilities are minimal but adequate for the purpose.

Suppose you want to use ThinkSheet to plan a review of the product. Type "ThinkSheet Review" into the first frame and press Return. A box closes round the entered words. Click to open a second frame and enter "Presentation", and a third

to type in "ThinkSheet in Action". Drag the second and third boxes over the first, and they disappear through it to the next level. Clicking on the tiny keyhole icon beside the first box, which has now changed from grey to red, takes you down to the second level where the sub-headings are now displayed with the parent box also visible at the top. Type in other key ideas at this level and drop them through either keyhole and the hierarchy of ideas starts to build through as many levels as you choose. Clicking in any existing box highlights it as the active window, and text may be added or edited at any time. Redundant boxes can be dumped in the bin.

When the writing plan is complete click on one of the display as text icons, and the entire structure is presented either as continuous text or in the form of a listing, following each hierarchy in a logical sequence, and numbered or not as requested. The menu structure enables this output to be printed (employing any loaded RISC OS printer driver), saved to disc or transferred in memory to a word processor. Text in boxes may also be generated but this is only of value if the system font is used to display it; proportioned fonts destroy the effect. The clipboard allows boxes to be transferred between levels, while the cut and paste options enable them to be merged or split. The search facility allows simple word searches to be made through all levels, with wildcards included if desired, and will find and display all occurrences of the entered string embedded anywhere in all boxes at all levels. Completed ThinkSheets may be saved to a filer window in the familiar manner.

Clicking with Menu over the icon bar icon allows sheets to be opened or cleared from memory and permits the setting and saving of preferences, including auto-save, background colour, and a list of foreign languages in which menu captions may be displayed. Several sheets may be held in memory together and boxes may be dragged between them. Dragging with Select moves, and with Adjust, copies, a box to another destination.

CONCLUSIONS

My teacher friends quail at the merest mention of the National Curriculum, but the ThinkSheet manual devotes several pages to describing the relevance of this product to defined achievement targets in various National Curriculum disciplines. The notes, under such headings as English, Technology, Science, etc., are obviously written from close encounter, and I am sure they may be taken as well informed and reliable. The comment is usefully made that ThinkSheet can be helpful in English studies not only for planning new writing, but also for analysing existing text. Although not aimed exclusively at the education market, ThinkSheet deserves some attention from the purchasers of school software.

Preferences window with German captions

Although identified as issue 1.00 the review version of ThinkSheet was fully stable throughout my explorations. What it does may not seem very remarkable to a seasoned writer, but it does it flawlessly. If this tidy and intuitive application is the kind of tool you think might be useful, I recommend that you take a look. Any assessment of value for money must be left to the potential purchaser and be gauged according to how closely its provisions are judged to mirror the planning and organising style of a writer or to meet the National Curriculum needs of the classroom.

Product *ThinkSheet*
Supplier *Fisher-Marriott Software*
3 Grove Road, Ansty,
Warwickshire CV7 9JD.
Tel. 0203 616325
Price *Single User: £45.83 inc. VAT*
Site Licence: £89.00 ex. VAT

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PC Corner: Using Expanded Memory

By Lee Calcraft

The so-called LIM EMS (after Lotus/Intel/Microsoft Expanded Memory Specification) was developed in 1985 to allow DOS programs to access memory beyond the ubiquitous 640K limit of the 8086 processor. It achieves this by using bank switching to page memory in and out of the addressing range of the CPU. Many DOS applications now make use of expanded memory, and with version 1.80 of their Emulator, Acorn have made this feature available to Arc users.

BOOTING UP

To get expanded memory up and running on the Emulator, you will need Acorn's expanded memory device driver. This is supplied as a file named:

```
EMS.SYS
```

on their MS-DOS or DR DOS disc. You should copy this to the appropriate directory if you are using a hard disc - for example:

```
C:\DOS\EMS.SYS
```

You then need to add a line to your *CONFIG.SYS* file to load the driver. Something like the following will do:

```
DEVICE=C:\DOS\EMS.SYS
```

Ignore the advice in the Emulator manual which tells you to load:

```
EMM.SYS
```

When you next boot up you will see the words:

```
Acorn Expanded memory Manager (c)1992
```

Allocation of memory is user-controlled from the Emulator's Configure option on the icon bar menu, and must be set before you open the Emulator window. Type a suitable value into the *LIM EMS* size box, and click on OK. Then run the Emulator by clicking on the icon bar icon.

CONFIGURING EMS SIZE

If you have asked for more expanded memory than is available, you will get the message:

```
Unable to allocate expanded memory
```

and the Emulator will not run. It would be more helpful if the Emulator just grabbed what was available, and informed you of what it had done.

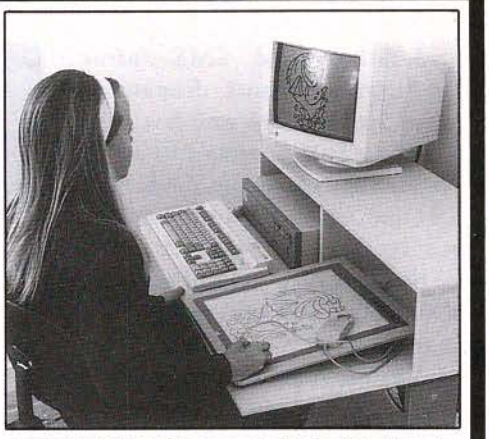
After the error message, you will need to quit the Emulator, and reload it again from disc (because that is the only way to access the Configure option). So you are left with a rather clumsy trial-and-error approach.

The best way to guess at how much to claim is to set the value to zero bytes, and run the Emulator. Then look at the Task Manager (click on the Acorn icon on RISC OS 3), and see how much memory remains unused. Then subtract 32K from this, and use the resulting value for the LIM EMS size in the Emulator Configure dialogue.

Once the expanded memory is installed, applications will automatically make use of it where appropriate. Be warned, however, that Acorn's emulation conforms to version 3.2 of the LIM EMS standard, whereas some software demands at least version 4.0. For this reason, the memory tests on DOS 5 (the commands MEM, and the DEBUG command XM) report that no expanded memory is available regardless of how much you have allocated on the Emulator. The Norton Utilities and DR DOS 5, however, both include tests which correctly display the amount of Acorn expanded memory.

If you know of other software which works happily with Acorn's expanded memory device driver, please drop us a line, and we will compile a list.

THERE ARE TIMES WHEN A MOUSE IS A REAL HANDFUL!



A mouse is great as a pointing device, but when it comes to freehand drawing in art packages, accurately tracing drawings, or mapping contours, etc., it can prove a real handicap. The TechSoft HANDIPAD digitizing tablet is an absolute device. Unlike a mouse, the puck's position on the tablet always corresponds to the cursor position on screen. The puck has cross hairs for accurate tracing. Alternatively, the pen-like stylus can be used to allow a much more natural drawing action, far better for artistic and freehand work. The stylish Handipad has a 305x305mm active area, transparent overlay sheet to place drawings under, and comes complete with mains power supply, puck, stylus and serial cable. (Makes a great mouse mat too!)

TECHSOFT HANDIPAD

Archimedes Compatible *The mouse emulation software module provided is compatible with most software applications. The module allows both mouse and tablet to be active (by simply moving the puck off the active area the mouse re-gains control). If a small drawing is to be traced, clicking either side of the drawing with the fourth puck button "zooms" this area to fill the screen.*

TECHSOFT UK Ltd., Old School Lane, Erryrys, Mold, Clwyd, CH7 4DA Tel: 082 43 318 Fax : 082 43 564

TECHSOFT HANDIPAD £175 +£8 p & p +VAT

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SIZE	1Mb	2Mb	4Mb	8Mb
PRICE	£195	£230	£295	£425

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Wimp Function/Procedure Library Part 6

By Mark Moxon

This month I'll explain more about how to use the save box routines from last month. Elsewhere in this issue an example application *(Desktop File Transfer)* is provided, and the line numbers in the following refer to this listing.

THE SAVE ROUTINES

Last month there was a very brief explanation of how to use the save box routines, and here I hope to expand on that. The first step when using these routines is to create a standard save box, which is done in lines 310 to 390. It is important to keep the icon numbers in variables, as they are needed later.

Also described last month was a scheme for including calls to the routines, and here it is again, but with more detail and with references to the File Transfer application listed on page 28. This shows how to react to each of the relevant Poll reason codes.

6 **(Mouse_Click)**
If the click is on the save box's OK icon, call PROCquicksave (line 790). If it is a drag-click on the save box's sprite icon, call PROCstart_dragsave (line 800).

7 **(User_Drag_Box)**
Call PROCend_dragsave (line 680). Here the length of the file to be saved must be passed, or an estimate if the actual length is not available.

8 **(Key_Pressed)**
If Return is pressed in the save box's writable icon, call PROCquicksave (line 690).

9 **(Menu_Selection)**
If the 'Save' menu option is chosen, call PROCquicksave (line 880).

17,18 **(User_Messages)**
If message is type 2 (DataSaveAck), call FNmessage_datasave (line 960 to 970). If message is type 6 (RAMFetch), call FNmessage_ramsave (see below).

There is one more part to the system, briefly mentioned last month. The main application program (i.e. *!RunImage*) must contain a procedure called PROCsave which takes one parameter, namely a string. This procedure should save the file to the name given in the argument string. PROCsave is called when saving to a file takes place - it is not called during RAM transfer, but must always be present as not all applications support RAM transfer. The procedure in the example program is in lines 1150 to 1190, and simply checks the validity of the pathname given, and then saves the file. The menu is removed in line 1180.

SAVING VIA RAM TRANSFER

Some applications support saving via RAM transfer, which is much quicker than using scrap file transfer (which is what the Scrap application is for). The usual scrap file method consists of the source application saving the file to the scrap directory (within !Scrap), and the destination application then loading this file. When RAM transfer takes place, the two applications transmit blocks of memory via the Wimp, and there is no disc access at all - hence the increased speed.

The Wimp library has only one routine for implementing RAM transfer, namely FNmessage_ramsave. This should be called in response to Wimp message 6 (RAMFetch), as in lines 1010 to 1040. A variable (called *firstsave%* in the example) should be initialised to TRUE (line 240). This enables the RAM save to set up the correct variables for the routine, as message 6 is returned for each block transmitted, and the application has to keep track of which block it is on.

The above is deliberately vague. If you use the scheme in the example, there should be no problems. The method, though appearing simple, is in fact quite complicated, as the variable *firstsave%* changes from TRUE to FALSE to TRUE again during the RAM save. If you want to understand the protocol more, you'll have to read the PRM, as the process is quite involved.

HINTS & TIPS

Don't forget to keep sending in your hints on anything relevant to the Archimedes range (RISC OS 2 and particularly RISC OS 3), and remember, we pay for all hints we publish.

DOS COPYING PROBLEMS: RISC OS 3 BUG

Robin Watts

If you copy a file from ADFS to DOS on RISC OS 3.10, then beware. If the file size is such that:

```
filesize MOD 4096 < 256
```

then the Filer doesn't write the last portion of the file correctly (the last filesize MOD 4096 bytes, to be precise). To ensure that all the data *is* written to the disc, dismount the destination disc after copying by using *Dismount after copying has taken place.

PLAYBACK AND SHOWMOUSE

Geoff Preston

ShowMouse, from the RISC User disc for Volume 4 Issue 5, is an application which displays a picture of the mouse in a little window, and highlights the buttons when they are pressed. PlayBack, RISC Developments' program for preparing demonstrations for use in the classroom, causes ShowMouse to work in exactly the right way, so you can now play recordings and show exactly when you pressed any of the mouse buttons. We are fast approaching the time when teachers don't even have to be in the room to teach a lesson!

SPEED UP YOUR ARM250

Simon Burrows

The new Acorn machines which are fitted with an ARM250 processor do not access the ROMs at the fastest possible speed. By running the ROMs at two cycle access rather than three, it is possible to speed up these machines by a whole 30%. To speed up your machine, type (in Basic):

```
SYS &1A,&80,&C0
```

and to slow them down again:

```
SYS &1A,&40,&C0
```

The trick is analogous to that used to speed up the 300/400 series of machines, but the 30% speed increase on the ARM250 is rather more dramatic.

SPRITE DRAGGING ON RISC OS 3.10

Simon Burrows

Solid sprite dragging is available on RISC OS 3, which means that when you do a drag save from a save box, then the whole sprite is dragged, rather than just an outline box (note this only applies to save boxes, not Filer drags). To turn on sprite dragging on RISC OS 3.00 you should use our Force A Drag application (RISC User disc 5:10), but on RISC OS 3.10 all you need to do is press F12 and type:

```
*FX 162,28,3
```

to turn solid sprite dragging on. To turn it off again, you need the following Basic program:

```
10 SYS"OS_Byte",161,28 TO R0,R1,R2
20 R2=R2 AND (255-2)
30 SYS"OS_Byte",162,28,R2
```

TOO MANY FONT DIRECTORIES IN RISC OS 3

Kell Gatherer

RISC OS 3 allows fonts to be grouped in several different font directories, using a new command in the font directory's !Boot file. The command:

```
*FontInstall <Obey$Dir>
```

adds a new directory to Font$Path. Problems arise, however, if Font$Path exceeds 235 characters in length: the obscure and anonymous error message "Buffer overflow" is given. This is exacerbated by the fact that RISC OS 3 also adds "Resources:$.Fonts." to Font$Path. Assigning a variable to the font directories doesn't help either:

```
*Set Font$Dir <Obey$Dir>
*SetMacro Font$Path <Font$Dir>.Font1
.,<Font$Dir>.Font2.
```

results in a macro only 35 characters long, but certain applications (such as Impression) evaluate Font$Path in their *!Run* files, e.g.:

```
*If "<Font$Path>"="" ERROR ...
```

at which point the <Font$Dir> is expanded to a full pathname. If the resultant Font$Path exceeds 235 characters, the obscure, unhelpful and anonymous error message "Expression is a string" is given.

The only solution to the above problems lies in ensuring that Font$Path is kept short, either by having a maximum of three of four font directories, or by keeping directory names as short as possible by keeping them (as Acorn recommend) in the root directory of your disc. Alternatively, Impression can cope perfectly well if the offending '*If' line is deleted.

OVATION - SAVING MARKED TEXT

Chris Wragg

With reference to the Hints and Tips in the November issue, my curiosity was aroused by Lee Calcraft's comments about marking in Ovation. If you do not wish to delete the rest of your text, there is a better way to save a small section. First, mark the section you wish to save, and then use Ctrl-C to copy it to the clipboard (or Ctrl-X if you want to delete it from the existing file). Now open a new Ovation document and press Ctrl-V, thus placing your text into the new window. This can now be saved in the normal manner. This has another useful aspect in that if you open the new document using the same stylesheet as the first, then the format, ruler and styles are all preserved as in the original.

FORMAL ARRAY PARAMETERS IN BASIC

Timothy Milward

I have found a feature of Basic V which, at first glance, could confuse: it is to do with Basic V's treatment of arrays as procedure parameters. The Basic Guide, page 77, states that "formal parameters of a procedure are local" and "parameters may be... arrays", but on page 87 it describes how arrays are passed by reference, i.e. Basic V does not make the array contents local. Consider these program fragments:

```
a%()=5
A%()=10
PROCdouble(A%())
END
DEF PROCdouble(a%())
a%()=a%()*2
ENDPROC
```

This will leave the contents of a%() outside the procedure PROCdouble unchanged, as is expected, but the contents of A%() have been doubled. We would only expect this to occur if we used the syntax DEF PROCdouble(RETURN a%()). A proposed solution when localising, is required, is to introduce a new array and copy a%() to it. The implementation in Basic V of this array passing obviously saves time and memory, but is worth knowing this to avoid unexpected results.

USING ALTERNATIVE PRINTER SPRITES

Ben Avison

The RISC OS 3 Applications Guide states, in its chapter on PrintEdit, that an alternative sprite may be used as the icon for any new printer definition, but it fails to state how to implement them, or how to change definitions already in use. The sprite needs to be in the Wimp sprite pool when the Printer Manager is loaded: this means that the sprite should be added to one of the following:

```
!Printers.!Sprites
!Printers.dp.Resources.!Sprites
!Printers.lj.Resources.!Sprites
!Printers.ps.Resources.!Sprites
```

The sprite should be in mode 12, with a height of 17 pixels and any width you require; it should be accompanied by a similar sprite, of the same name prefixed with the two characters 's_', but coloured so as to appear greyed-out. Additionally the equivalent !Sprites22 and !Sprites23 files should be updated with new hi-res colour and mono sprites respectively. If you are creating a new definition file in PrintEdit, or altering an existing one, then you can now enter the name of the sprite you have just created into the 'Sprite name' field.

If the Printer Manager has already used a printer definition file with a 'Printer type' to

which you want to assign a new icon, then you will find that using your altered printer definition file will not use the new sprite for its icon. This is because the Printer Manager takes an internal copy of the definition file the first time it is used. You will either need to produce a new printer definition file with a new 'Printer type' name, or alter the Printer Manager's internal record, as follows. Identify the class of your printer definition file as dot matrix/inkjet, LaserJet or PostScript, and open the directory !Printers.dp, !Printers.lj or !Printers.ps respectively. Now, load the file *PrData* into Edit and look for the particular printer type, which will be after the identifier 'pr_nme:'. Two lines below this, after 'sp_nme:', will be the name of the old sprite; change this to the name of your new sprite, and save the file.

At this stage, any printer started by dragging the altered definition to the Printer Manager will start up with the new sprite. However, and printers set up while PrData was still incorrect will retain the old sprite. To alter this, load !Printers.Settings into Edit and look for the printer name you want to change to use a new sprite (the name will be prefixed by 'sn:'). The sprite name will appear on the next line, prefixed by 'ic:' - change this to the new sprite name, and all will be well. If a standard printer type was being used (i.e. dp, lj or ps) then the sprite name will be blank; in this case simply fill in the field with the new name.

CHANGING STYLES IN IMPRESSION

David Symes

Recently, when using Impression to write a document, I had to replace all the occurrences of a certain word by the same word, but in italics. This could be done by hand, but the following method makes the process quicker and easier. First, go to the first occurrence of the word or phrase that needs changing and mark it in the usual way. Using the *Effects* submenu, apply the required style to it (italic font in the above example, though any effects can be used). Press Ctrl-C to copy this to the clipboard. Now press Ctrl-F4 to bring up the *Find and Replace* dialogue box, and type the word or phrase to be changed into the *Find what:* icon. Click on *Find next*, and the next occurrence of the word or phrase is found. Now press Ctrl-V and the new style is applied by replacing the old word/phrase with the version on the clipboard. To change the rest of the file, click on *Find next* again and repeat the process until the last match is found.

FASTER IF STATEMENTS

Jack Pike

The two statements:

```
IF x AND y THEN z
```

and:

```
IF x:IF y THEN z
```

are logically equivalent in Basic, such that z is executed only if both x and y are true. However, there is an important difference between them. In the first statement y is always evaluated, whereas in the second y is only evaluated when x is true. When y contains complicated expressions this can be used to speed up computation times. There is another use for the second type of construct which can help avoid computation errors. If the situation arises that when x is false, then evaluating y will give an error, for example:

```
IF x<>0 AND (1/x)<0.5 THEN...
```

then the structure:

```
IF x<>0:IF (1/x)<0.5 THEN...
```

will never give an error if x=0, because 1/x will not be evaluated, unlike in the first example.

BASIC PRINTER UNDER RISC OS 3

Ken Cowap

The very useful application BPrint (RISC User Volume 4 Issue 9) doesn't get on with RISC OS 3 when it comes to listing or printing Basic programs. The problem lies with the program BLIST, originally published on its own in RISC User Volume 2 Issue 5. The problem occurs when either List File or Print File is clicked, when the application can die a horrible death (Address exception, Branch through zero or Abort on instruction fetch). To overcome this problem, re-assemble the BLIST file by running the FileList program from Volume 2 Issue 5 under RISC OS 3.10.

The 80 Column

An occasional round-up of items relating to printers and printing, compiled by Alan Wrigley.

RISC OS 3 UPDATE

From time to time in the *80 Column* I have referred to the facility built into the RISC OS printer drivers (release 2 onwards) for character translation; i.e. the ability to substitute any ASCII code with another code or sequence of codes before sending the document to a printer.

With RISC OS 2, this involved modifying the *PrDataSrc* file within the printer driver, but with RISC OS 3.10 character translation is made much easier. All you have to do is to use the *PrintEdit* application supplied on the Applications Disc, and documented in the RISC OS 3 Applications Guide. If you load a printer definition file into the editor, you will see that there is an icon marked *Edit character mappings*. Selecting this opens a window which allows you to specify the translation string for any character in the ASCII set. If you examine those already in the window you will see the format required.

In a future *80 Column* I will look in some detail at printer definition files.

...AND HELP FOR RISC OS 2 USERS

If you are still using RISC OS 2, you will need to use the rather more cumbersome method of mapping character translations described in an earlier *80 Column* (RISC User 5:3). The magazine disc for that issue carried a series of text files which could be used to update the *PrDataSrc* file, but they only contained characters which were directly available from the printer's own set. Jeff Gorman has gone one better and produced a file for Epson-compatible printers which can cope with most characters in the Archimedes set by making use of superscript and subscript, backspacing and, where available, fractional reverse feed to create accented characters etc. This is included on this month's magazine disc, together with instructions on how to use it.

USING CC'S TURBO DRIVER CABLE WITH THE RISC OS 3 PRINTER MANAGER

Robin Watts

Computer Concepts' Turbo Driver for the Canon BJ-10ex uses a special type of cable. If for any reason you wish to print from the standard RISC OS 3 *Printers* printer manager using the CC turbo driver lead, you must first make sure that the Computer Concepts module *!BJ10e.Modules.Turbo* is loaded.

RISC OS 3 PRINTER BUFFER

RISC OS 2 provided a standard printer buffer, which was just 1K long. The small size of this buffer resulted in long printing times particularly when sending graphics to a dot-matrix printer, and many users installed software which allocated a much larger block of memory for use as a printer buffer (an example is *PrintBuff* from the RISC User 4:3 magazine disc). However, you should not use such buffers with RISC OS 3 since the machine is likely to crash if you do so. RISC OS 3 has a configurable printer buffer built in, the size of which can be altered with the command:

```
Configure PrinterBufferSize nK
```

where n is the required size in kilobytes. To make a significant difference to graphics printing you will need several hundred kilobytes. As always with the *Configure* command, you must reset the computer before the new values take effect.

PAGE LENGTH FOR TEXT PRINTING

If, when printing via a RISC OS 3 printer driver, you happen to find that you get a form feed after each and every line, you may well have forgotten to set the text page height for the paper size you are using. See *Hints & Tips* in last month's RISC User (6:2) for a detailed explanation of this.

Getting the Best from Ovation

Bill Nichols explores some of the techniques he uses with this versatile document processor.

I enjoy using Ovation on the Archimedes. Together, they give me at home a system for document design and production which only a few years ago would have been outside the scope of anyone but the professional printer. I suppose the most general use is for letter writing, but it would be a mistake to use the system for this alone. In this and subsequent articles I shall endeavour to describe how I extend the use of Ovation in a variety of ways which I hope will be useful to other readers. I should also be interested to hear about any good ideas you too may have and would like to share with others.

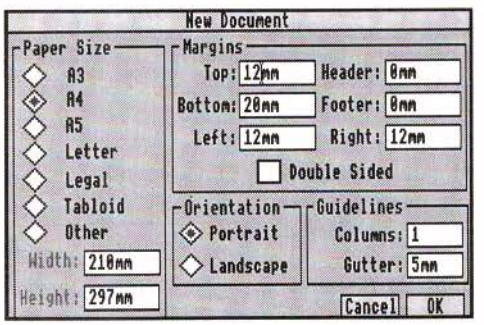


Figure 1. Defining a new document

Of course the quality of the final print rests at least as much with the printer as it does with the software. The highest quality of output is probably provided by laser printers. Coming quite close to them is the new range of inkjet and bubblejet printers. These are considerably cheaper, and will probably be the choice for many users. Dot matrix printers are fine for text printing but are slow and noisy, and much less satisfactory for diagrams and half-tone pictures, or when one wishes to make use of the wide range of fonts which are now available for the Archimedes.

CHANGING THE DEFAULT PAGE FORMAT

As supplied, Ovation has a number of set defaults. They are easily modified. As an exercise, we will look at how to change the form of the default document page and increase the range of text styles which are immediately available when Ovation is loaded. Click with the Menu button on the Ovation icon on the icon bar. Select *New Document* and a dialogue box appears (see figure 1).

Experience will suggest the most useful values for your way of working. For the moment replace the default values with these:

top = 15mm,
left and right = 13mm
bottom = 20mm

There will be only one column, so the gutter value (the space between columns) does not apply and can be ignored. We can also leave the other values as set, i.e. A4, portrait position, and single sheets. *Double Sided* is mainly used when writing a book or pamphlet with the pages side by side and with printing on both sides of the paper. Nor do we require headers and footers and these settings are left at 0mm. Click on OK and a page will appear on screen with the main frame to the chosen dimensions.

If you have upgraded to RISC OS 3.1 (as you should) you will have in ROM Acorn's Font Manager and the three fonts Trinity, Homerton and Corpus. Together with those supplied with Ovation they provide a good range for everyday use. Ovation has two methods for introducing fonts into the document. They are *Paragraph Styles* and *Local Styles*. Use the first for blocks of text or for headings, even if the latter is a single word. The rule is: if the text ends with a Return, *Paragraph Styles* can be used.

USING LOCAL STYLES

If on the other hand you wish to modify one or several words embedded within text, use *Local Styles* - the three separate selections in the main menu, *Font*, *Size* and *Style*. The *Format* option may be chosen as well if appropriate. The most effective way to make these choices is to use the Adjust

button starting with *Format* and working up the list to *Font*, using Select for the final choice. This makes all the choices active and the fonts are cached just once and applied to the highlighted text.

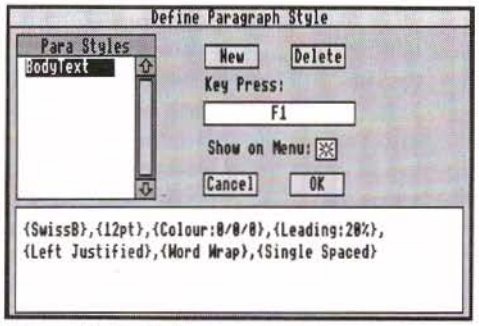


Figure 2. Defining or editing a paragraph style

USING PARAGRAPH STYLES

Now we will create the paragraph styles for your default document. From *Para Style* in the main menu choose *Edit Style* to get the dialogue box as shown in figure 2).

In the small *Para Styles* window (or "pane") *BodyText* is highlighted. Click the Menu button and choose *Left format, Normal text, 11pt, Paladin* (the order of selection is immaterial with Paragraph Styles). This will change the default settings for *BodyText*. Using Select for the final choice sets them all, and the full specification can be seen in the lower large window.

To create a new style, select *New*, and type in a name (e.g. *MainHead*). This name now appears highlighted in the Para Styles pane. Click the Menu button and using Adjust choose *Centre, Bold, 18pt, SwissB* (the last choice with Select). Repeat the process for a third style called SubHead: Left, Bold, 14pt SwissB. Finally, click on OK to exit from the window and to fix all the choices you have made. When you next open the *Para Styles* sub-menu you will see the new styles listed below *BodyText*. I suggest also that the option at the base of the Object menu is active (ticked) - *Snap to Guides*.

Now hold down Shift and double-click to open Ovation's own directory. Save the document you have just prepared with the name *Default* by dragging its icon into this directory. In future this will be the default document you will get on screen when you click with Select on the Ovation icon on the icon bar.

CREATING MORE SPECIALISED PAGE LAYOUTS

I also hold in a separate directory called *Masters* a number of blank documents and some style sheets which act as templates for more specialised work. One of these is useful for more formal private and business correspondence. Figure 3 should make the layout clear.

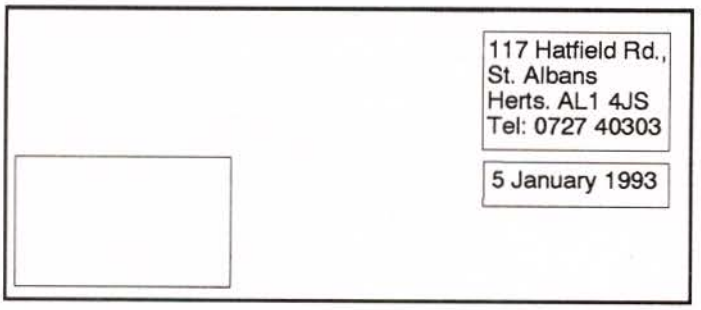


Figure 3. Example letter-head layout

To create this, starting with the default document as described above, construct three text frames, for your address, the date and for the addressee, the last two being filled in at the time of writing. This layout must be on the document page, not the Master page so that plain unheaded continuation sheets will follow automatically if required. Save the outline document as *LetterHd/A* or whatever. To enter the date when writing a letter, activate the narrow frame below your address (by clicking within it) and press Ctrl-Insert.

A5 SIZE CORRESPONDENCE

For more personal correspondence, I prefer to use A5 headed notepaper. If your printer will feed A5 sheets of paper, there is no problem. Use the *New Document* box to define an A5 sheet, design the notepaper and away you go. If you are restricted to using A4 sheets, as I am, then the options are not so simple. Printing an A5 document sideways (landscape) on an A4 sheet will

fill half the sheet and is one possibility. Passing the paper twice through the printer will print two A5 pages on one sheet although this seems to me a rather clumsy solution. I use the following, slightly unorthodox method.

117 Hatfield Road, St. Albans, Herts. AL1 4JS

Tel: 0727 40303

5 January 1993

Figure 4. Example letter-head

From the *New Document* box, make these choices:

landscape A4;
top = right = left = 12mm;
bottom = 15mm;
2 columns;
gutter = 24mm;
No header or footer.

Bring up the new page (click on OK). Near to the top of the left hand column draw a text frame, then from the *Modify Frame* option in the *Object* menu, make it exactly X=12mm; Y=12mm; W=124.5mm; Ht=20mm. Type into this frame your address on one line and the telephone number on the next line. Highlight the text and then choose the font and styles which you prefer for this heading. I suggest *Centre Format, 12pt, Chaucer* (an italic script). Now repeat this frame at the top of the right-hand column. One could do it from scratch, or use *Copy* and *Paste* or duplicate the frame. Here, I will describe the copy and paste method.

With the address frame active, select Copy Text Frame from the Object menu. Now move the caret out of this text frame into the main column below. Open the Object menu and select Paste Text Frame. A duplicate of the original will appear somewhere in the middle of the screen. Move the pointer onto it and by pressing Adjust slide the new frame up to the top of the right-hand column and allow it to snap to the guidelines. You now have two identical columns which in effect are the two A5 sheets of notepaper side by side.

There is one last 'trick'. You will find that you can place the caret at the top of the left-hand 'page' but not in the right-hand one. To allow either page to be used, click on the left-hand page, and then press Enter - the caret will move to the top of the next page. Save the document as LetterHd/B say. You can now place the caret at the top of either frame, and begin the letter where you please. If your letter is likely to exceed one A5 page, start in the right-hand page, and when you get to the bottom of the page Ovation will generate two further A5 size pages (you can also delete the address frame from a page by selecting it, and using the Delete option from the Object menu). A typical letter heading is shown in figure 4. The date is entered using Ctrl-Insert as before. Don't forget when printing to set the button to Landscape in the Print Setup box (File menu).

Note: feedback from readers will be welcome for this column - good ideas can be passed on, queries answered, and problems solved.

Points Arising . . .

BASIC PROCEDURE AND FUNCTION ANALYSER

(Volume 6 Issue 1 Disc Only)

As it stands, the application ignores procedures and functions whose names start with '@'. to remedy this, change the start of line 1880 in *!RunImage* to:

```
UNTIL b%<48 OR (b%>57 AND b%<64)...
```

i.e. change the 65 to 64.

JELLO AND THE ART OF 3D GRAPHICS (PART 3)

(Volume 6 Issue 2)

Unfortunately a few lines fell off the end of some of the listings, as follows:

JelloMain

```
1650 FNdraw_cube_front
2300 BL rotate_cube
```

CubeFront

```
190 FNdraw_face(3,7,8,4):]:=""
```

CubeVisibl

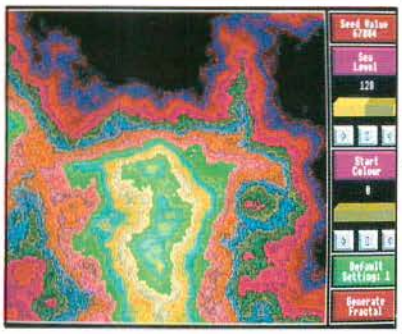
```
260 ORRLT R11,R11,#1<<f:]:=""
```

Thanks to those who pointed this out.

RISC User Volume 5 Special Disc

The Volume 5 Special Disc is the latest in a series of highly popular annual releases. As with previous Special Discs, this one combines a selection of the best applications and other files from RISC User (Volume 5), in many instances improved and updated from the original versions, together with several original and previously unpublished items.

There has to be something for everyone here, and the low members' price makes this excellent value for money. Remember, though, that the current price of £4.95 applies only till 31st December 1992. After that the price of the disc will revert to a standard £9.95 (to members - non-members pay £14.90 already).



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Two Draw files of arrows, flashes and borders.

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Handy application for locating character positions on screen.

Mouse Pointer Controller
For drawing precisely horizontal or vertical lines.

Random Fractal Generator
An original application in the form of a fast fractal generator.

Music
A new Maestro file for Komm, Jesu, Komm by J.S.Bach.

ArcScan index
for all of Volume 5 of RISC User.

Price to members £9.95 inc. VAT Stock code PV5S, p&p £1. Price to non-members £14.90 plus £1 p&p.

RISC User Fonts Disc

The RISC User Fonts Disc contains ten high quality outline fonts (all available exclusively from RISC Developments), together with Acorn's Outline Font Manager (if you have not yet upgraded to RISC OS 3.10), and five useful applications for further processing and manipulation of outline fonts. These are supplied on a single disc with a comprehensive menu system making everything very easy to use. All this costs just £9.95 inc. VAT to RISC User subscribers, representing extremely good value for money.

Ten Outline Fonts

Atlantis	Austin
BlackLet	Chancellor
Classroom	Gangster
Italian	Mercury
MILITARY	Wessex

Other Applications

ShowFonts	Displays outline fonts on screen or prints them for reference.
DrawFont	Converts outline fonts into paths for use in Draw.
FontSwap	Allows easy management of multiple font directories.
FontRead	Downloads font definitions to PostScript printers
FontCtrl	Allows easy tuning of font configuration options.

The RISC User Fonts Disc costs just £9.95 inc. VAT to RISC User subscribers (£14.90 to non-members), plus p&p £1, stock code PFNT.

RISC OS 3 Technical Tips

We Present a Round-up of Technical Hints for RISC OS 3 Users

READING FILETYPES

Alan Wrigley

Finding the filetype of a file is much easier with RISC OS 3.10 than it was with RISC OS 2. Four new *OS_File* reason codes are provided (20-23) which enable you to read the catalogue information for a file, including a direct reading of the filetype. As with other *OS_File* calls, the difference between the reason codes is in the object name specified in R1. If R1 points to the full pathname of the file, as will usually be the case, then R0 should contain the value 23. No other entry parameters are required, and the filetype will be returned in R6.

COLOURED SPRITES

David Spencer

With older versions of the ColourTrans module, if you wanted to plot a sprite in its true colours you had to copy out its palette before calling SWI "ColourTrans _SelectGCOLTable". However, this can now be avoided by passing the SWI a pointer to a sprite area in R0, and a pointer to the sprite, or its name, in R1. Bit 0 of R5 should be set if R1 points to the sprite directly, or clear if R1 points to the sprite's name. Bit 1 of R5 determines the behaviour if the sprite doesn't have a palette. If this bit is set, the current palette will be used, otherwise the default for the sprite's mode is used. The other parameters to the SWI are unchanged from the original PRM description.

Incidentally, these changes were introduced in ColourTrans 0.52 which most RISC OS 2 users will have, but were not widely documented.

INITIATING A TASK WINDOW

Lee Calcraft

RISC OS 3 provides a neat way to launch a task in a new task window. It uses the star command *TaskWindow*, which can take a number of parameters, a selection of which are given below:

```
*TaskWindow [command] [[-wimpslot] nK]
[-display] [-ctrl] [-quit]
```

The flag -display means *open the window immediately*, while *-quit* means *terminate the task after the command.*

The command itself may only be issued via SWI "Wimp_StartTask" or **WimpTask*, and these may only be called from within an active task. The command may however be called from a DeskEdit User Command entry. This would enable you to launch an Obey file (for a compiler, say) within its own dedicated Task Window - all from a single keystroke. For example:

```
Compile=\s TaskWindow AMU
```

READING A DISC'S FREE SPACE

Alan Wrigley

Sometimes it can be useful to know how much free space is left on a disc. For example, if you are creating a temporary scrap file while processing the data in another file, you may want to warn the user that there will not be enough room before you start. RISC OS 2 had a SWI call "ADFS_FreeSpace" which would do this for an ADFS disc, but would not work with SCSI or any other filing system. However, RISC OS 3 has a new "OS_FSControl" call which will do the job. If you call "OS_FSControl" with the value 49 in R0, and a pointer to the disc name (e.g. "adfs::0") in R1, it will return the amount of free space on the disc in R0, the size of the largest creatable object in R1 and the disc size in R2.

SQUASH IT UP

David Spencer

The new module *Squash* provides, as its name suggests, facilities to compress and decompress blocks of data. It is in fact this module that forms the heart of the !Squash application, supplied on disc with RISC OS 3.

Squash works by compressing or decompressing data from one block of memory into another. However, a single 'squash' operation can carry over several blocks, so you could for example compress a file by reading it bit by bit into a buffer, compressing the buffer, and writing out the result. Squash is controlled by two SWIs, "Squash_Compress" and "Squash _Decompress", both of which take very similar parameters:

```
R0 = flags
    bit 0=0 => new operation
    =1 => continue operation
    bit 1=0 => end of input
    =1 => more input will follow
    bit 2=1 => use quick algorithm
    (decompress only)
    bit 3=1 => find size needed

R1 = workspace pointer (R0 bit 3 clear)
    or input length (R0 bit 3 set)
R2 = pointer to input data
R3 = amount of input data available
R4 = pointer to output buffer
R5 = amount of output space available
```

To use the calls, you must first make the call with bit 3 of R0 set, and with R1 containing the total length of the input data. This will return in R0 the amount of workspace the module requires, and in R1 the maximum size of the output (or -1 if it can't be calculated). This size is a worst case guess, and for compressing will usually be greater than the length of the input! You can then claim the required workspace and compress or decompress the data by passing the appropriate parameters to the SWI.

On exit from the SWI, R0 contains a status code; 0 for OK, 1 for ran out of input space or 2 for ran out of output space, and R2 to R5 are updated to indicate the amount of data and buffer space used. When handling data in more than one chunk, bit 0 of R0 must be set on all but the first chunk, and bit 1 set on all but the last chunk. When decompressing a single chunk, setting bit 2 of R0 will result in faster operation, but the output buffer must be guaranteed to be big enough.

EXPANDED SYSINFO

Lee Calcraft

RISC OS 3 provides a much expanded SWI "Wimp_ReadSysInfo" (&400F2). It provides information about the Wimp which is not readily available elsewhere, and is called with a value in R0 indicating the information required. On exit R0 contains the information requested, as follows:

On entry	On exit
0	No. of active tasks (as RISC OS 2)
1	Current Wimp mode
2	Pointer to iconsprites suffix for configured mode
3	0 => We are outside the Desktop or in a command window 1 => We are in the Desktop
4	0 => Left to right text entry 1 => Right to left text entry
5	Current task handle (0 if none) R1 = Version given to "Wimp_Initialise"
6	Reserved
7	Current Wimp version * 100

RECEIVING WIMP MESSAGES

Alan Wrigley

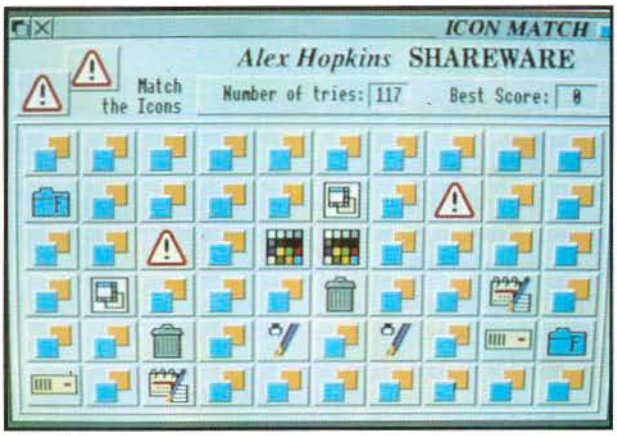
RISC OS 3.10 has a useful facility to mask out Wimp messages that you do not want to receive. This can often help to speed up operation of the Wimp, since broadcast messages will no longer be sent to your task unless you need to receive them. To be able to use the facility, the version number passed in R0 when calling "Wimp_Initialise" must be 300 or greater (typically 310 for RISC OS 3.10). To tell the Wimp which messages you want to receive, you pass a pointer in R3 which should point to a list of the required message numbers (4 bytes each), terminated by a zero word.

You must therefore pass a meaningful value in R3. If the contents are undefined, then anything could happen, including a crash. If however, R3 points to a word in memory containing zero, then all messages will be passed.

PD Software: Select and Collect

Simon Burrows gives his latest round up of the best of the PD scene.

The arrival of RISC OS 3 for all machines is causing quite a shakeup in the world of Public Domain software. Some of the earliest PD software was written to add important features missing from RISC OS 2, but Acorn has added many of their features to the new operating system. Some programs no longer work, and new versions of many items may be released to take advantage of the new features.



IconMatch: match the icons!

Authors of PD software are usually happy to receive letters from users of their software, so if you find something which does not appear to work, or even something which you would like to praise, jot a quick note to the author, enclosing a stamped addressed envelope, and see whether anything happens!

ICONMATCH

First we will look at a Desktop game called *IconMatch,* by PD author Alex Hopkins. This is based on the well known principle of having to match pairs of pictures from a large grid. IconMatch displays a grid of sixty squares, behind each of which is an icon. Each click reveals one of these, but once two are displayed, they are both hidden again unless they are identical. The object of the game is to match all of the pairs using your memory and perhaps a little bit of luck!

SUPERGRAM

A number of programs are written by people better known for their commercial software. For example, *Supergram* by William Tunstall-Pedoe (best known for writing CyberChess) is a very powerful anagram finder which has been finished to professional standards.

Supergram takes a word or phrase and searches out as many anagrams as possible, having checked the words generated with a dictionary. Various options are available, such as whether you want political, satirical or even mildly naughty words and phrases! Hand tuning is possible, and it certainly generates some interesting anagrams.

This is an excellent "fun" utility, also very suitable for every school and network. Full instructions are supplied so that teachers can decide whether rude or satirical phrases may be generated!

SCANNER

Most people are now aware that Acorn computers have not escaped from the problem of viruses, and it is vital that everyone checks their discs occasionally with an up-to-date virus killing program. Several are available in the Public Domain, but by far the best is called *Scanner,* written by Tor Houghton, as it is constantly being updated to deal with new viruses. Scanner does not operate in the Desktop, but is nevertheless easy to use and effective. Tor has also written a module called *Interferon,* which is intended to protect your machine all of the time if you load it as part of your boot sequence.

Scanner is a good example of Shareware - if you find it useful, you are expected to register with the author. However in this case registration will only cost most people the price of a disc and postage.

MENON

Menon is a little utility which many people swear by! It installs on the icon bar or backdrop, and allows applications to be loaded by selecting options from a menu, rather than having to wade through a large directory structure to find what you want. This can be especially useful for network users, where opening the right directory can take a long time, as well as placing an additional burden on the fileserver. The programs can even be on different floppy discs, and you will be prompted to insert the correct one.

PACKDIR

Several commercial programs exist to compress programs and other data so that they take up less disc space, but *PackDir* is the only one available as PD. PackDir currently uses LZW compression, as do most of the alternatives, so the degree of compression is similar to them. PackDir is also quite fast, particularly suitable for archiving directories, but the file format is not compatible with archives produced by most other packages, though SparkFS can read PackDir files.

QMC

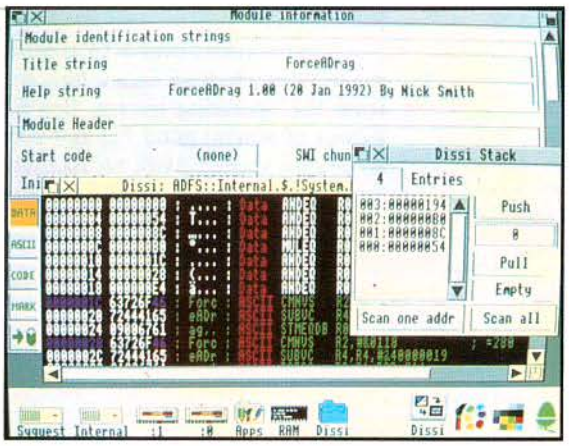
As I said in my last article, some of the simplest utilities are amongst the best. Most people find it rather cumbersome to open a couple of palette menus just to change screen mode, so *QMC* (Quick Mode Change) by Ben Summers provides four small boxes on the icon bar, and clicking on each of these changes to a different screen mode. The mode numbers are stored in the battery backed RAM so they are remembered when you switch the computer off.

DISSI

Programmers often have a need to disassemble machine code, and RISC OS has a very good disassembler built in, activated using the *MEMORYI command. However, it is useful to have this information available in a Desktop window, and *Dissi*, by John Tytgat (again of Belgian group BASS) does this and much more. It displays useful information about the file being examined, with stack manipulation functions and many options for marking and manipulating the code. Dissi is a Shareware program, although there are no restrictions on how much you can use it. By registering, you receive an enhanced version which cannot be distributed.

FILETREE

Also by John Tytgat is *FileTree*, ideal for those people like me who are constantly rearranging their hard discs. FileTree analyses any disc, and produces Draw files giving useful information about the location of files in the directory structure, as well as details of the files such as their lengths, for reference or to include in desktop publishing.



Dissi at work on a module

EAZICOPY

Have you ever needed to make several copies of a disc, for example to create a work disc for a class of school pupils? Using the built-in *BACKUP command can be fairly annoying, since it has to load in the contents of the old disc once for each copy. *Eazicopy* by Majid Anwar gets round this by storing the contents of the old disc in memory, and then writing it to many discs. The contents of each floppy can also be stored on hard disc, making it ideal for PD libraries and user clubs as well.

DISC CATALOGUING

A constant problem for keen PD software collectors is remembering where each item is - on which floppy disc or in which

directory on hard disc. Not surprisingly, several programs have been written to make the job of documenting your software collection as simple as possible. One of these is *Manager* (by Belgian group BASS), which allows you to go through items on your discs, typing in details of each piece of software so that the final database is as useful as possible.

365DAYS

Users of multi-user computers and bulletin boards may have come across various "fortune cookie" programs giving thoughts for the day. *365Days*, one of a multitude of PD applications from Andrew Flintham, does this by displaying a different observation or thought for every day of the year.

FILEUTILS

Some applications evolve to combine all of the features which an author feels are missing from the operating system. Ben Summers, author of several good PD and commercial programs, started work on *FileUtils* a long time ago, and it has developed into a very handy utility to have sitting on your icon bar. In particular, it can locate files (even within archives) and count file lengths more accurately than the built-in count, which ignores the space occupied by directories. FileUtils contains a wealth of other useful utilities, and is well worth a look.

FASTCRUNCH

The updated version of BBC BASIC V included with RISC OS 3.1 includes a new command called CRUNCH, which reduces the lengths of Basic programs by removing spaces, REM statements and redundant lines. If disc space is critical, several PD programs are available which can crunch programs to an even greater extent, for example by reducing the lengths of variable names and by merging lines of the Basic program. The best is probably *FastCrunch*, which lets you choose which methods can be used to crunch the program when it is dragged onto the FastCrunch icon.

LINKS

Finally we will look at *Links* which is intended to save disc space, and make it easier to update software when you receive a new version. Rather than having several copies of a piece of software in different places, Links by Brian Brunswick replaces all but one of these with short files, which when double-clicked, load the relevant application from wherever it happens to be, transparently to the user. This idea will be familiar to all UNIX users, and it is handy to have on RISC OS.

The Archimedes PD scene is changing all of the time, and there are many items of software which could be of interest to readers. If you have any PD software which you find useful, even if you have written it yourself, please send it in saying why you find it so good.

As in the case of Simon Burrows' previous article on PD software (see RISC User 5:7) all of the items referred to above have been collected together on two discs (PDX6 and PDX7). These cost just £1.60 each inclusive as with all our other PD discs. For further information please refer to the page on our PD Software Library.

The best Serial Link
BBC micro to Archimedes

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- *works with all new Acorn machines*
- *simply drag files to / from BBC*

Software only £25
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Glos, GL20 7LJ 0684 73173

C Notebook

Compiled and linked by Lee Calcraft

RISC_OSLib BUGS

S.R.Mansfield asks: Can you detail problems/inconsistencies/bugs within RISC_OSLib. I remember reading about how awful it was to use in the creation of Desktop applications. I am using it in applications currently, and gain a feeling of paranoia when they fail and defy all logic.

In my own experience, the major problem with using RISC_OSLib is the extreme sparsity of the documentation. What at first sight appear to be bugs often turn out to be the result of insufficient information available to the programmer. There are bugs, and Acorn would be the last to deny this, but there is usually a workaround. We have covered one or two howlers in this column to date (including this month - see below), and if readers have come across others, perhaps they could write in with their experiences.

EXTRA txtedit FUNCTIONS IN C 4

Gavin Wraith

Acorn's ANSI C 4 provides a number of useful functions not present in C 3. For example, the function:

```
txtedit_register_update_handler()
```

allows you to register an update handler that does nothing but return FALSE. The effect of this is to give you windows which behave just like those of Edit, but which are read-only.

There is a price to pay for this, however. As soon as you call *txtedit* functions in your source, the resulting executable increases by over 50K.

MAGNIFY A BUG

Sinjay Pattini

There is a bug in the *magnify* module of RISC_OSLib which causes it to crash after a "Too many windows" error (unlikely in RISC OS 3!). It seems that if *magnify* tries to open more windows than are available, it does not notice the fact, and when it attempts to close the non-existent window a fatal crash occurs.

CHECKING FOR CLib

David Pilling

In a recent issue of RISC User a method was described for correctly ensuring that the C library is loaded before a C program starts. That method depended on setting a system variable in the *!Run* file. Here is a simpler method:

```
    RMEnsure SharedCLibrary 0.00 RMLoad
System:Modules.CLib
    RMEnsure SharedCLibrary 3.50 Error
Hearsay needs SharedCLibrary 3.50 or
later
```

There is a common pitfall here. If you supply a recent CLib version number (e.g. 3.50) in place of the 0.00 in the first line, you could cause the Desktop to hang up. The problem arises if an application is currently running with a version of CLib older than 3.50. The first of the two lines would then result in Clib 3.50 being loaded, and causing any running tasks linked to the old library to crash. This is particularly important in RISC OS 3, where programs in the ROM like DOSFS, use the C library.

MISLEADING COMPILER MESSAGES

Lee Calcraft

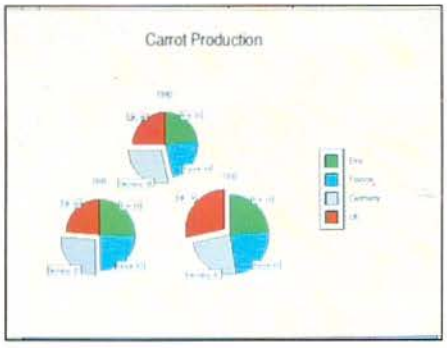
If you make mistakes in your source, it is sometimes hard for the compiler to work out exactly what has gone wrong. For example, if you leave the closing brace off a function definition, the compiler guesses wrongly that every line which follows was meant to form a part of the function, and as a consequence it throws up a vast smoke screen of error messages. It would be nice if it took an intelligent guess once in a while (for ANSI C version 5 please?).

This behaviour can be particularly baffling if the mistake happens to be at the end of a header file, because all the errors are registered as being in either the next header file which is #included, or in the source file itself. A missing semicolon causes the same problem - so beware.

ChartWell

Version 1.1

A sophisticated Graph and Chart Package which now offers new features.



Full handling of ***negative values*** in bar charts (both vertical and horizontal), line graphs and scatter graphs. Where negative values are used, the user will be able to choose whether axis labelling appears on the axis itself or at the left and/or bottom edges of the graph display. Bar charts using negative values will have the option of a solid or transparent 'zero platform' for 3D displays.

More ***flexible handling of data limits***, allowing the user to configure ChartWell for handling more data points than the current fixed limit. Users will now be able to allocate as much of the available memory in their system as they wish for this purpose.

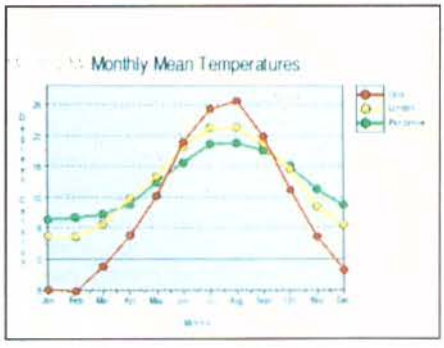
A number of improvements to positioning of labels, titles and values have been incorporated to avoid potential clashes and overlaps which occurred in some circumstances.

ChartWell offers ***24 different graph types*** :

- **horizontal and vertical bar charts**
- **line graphs**
- **scatter charts**
- **polar plots**
- **pie charts**

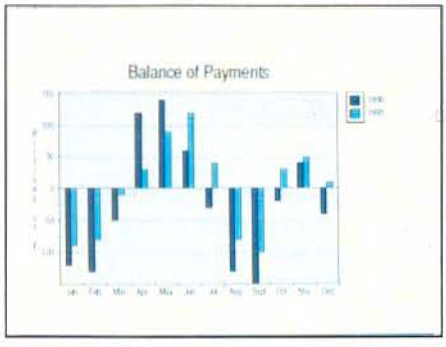
...and gives you ***complete user control*** over:

- **choice of colour**
- **graduated and shaded backgrounds**
- **data point styles**
- **bar widths and spacing**
- **use of titles and labels**
- **legends to provide a key**
- **scales and tick marks, etc.**



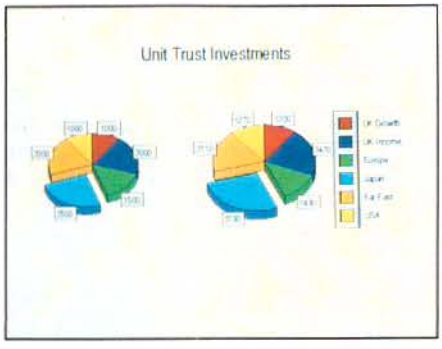
Data can be Imported from other applications, such as spreadsheets, databases, or created with a suitable editor as a text file.

Output is in standard Draw format for import into Draw or any other application, DTP for example.



ChartWell offers a variety of ***display options*** :

- **flat or 3D bar and pie charts**
- **user choice of angle for 3D pie chart display**
- **clustered, stacked or layered bar charts**
- **scatter graphs with choice of curve fitting techniques, regression lines and correlation coefficients, and use of error bars**
- **line graphs with choice of normal, cumulative area or stacked area displays.**



ChartWell's ***flexibility*** allows you to select only part of the data for display. You can also change the order of display - a useful feature when creating bar charts - data can be arranged in ascending order so long bars will not overlap shorter ones.

Use of 'STYLE SHEETS' allows a set of options to be saved with data for future reference. User choice of start-up options.

Chartwel V.1.1 and manual are available to members at **£29.95 Inc** + £2 p&p. Code **PCHWa**

Version 1.1 of ChartWell is available free of charge to existing users - send the original disc and a SAE marked ***ChartWell Upgrade to:***

RISC Developments Ltd. 117 Hatfield Road, St Albans, Herts AL1 4JS Tel: 0727 40303 Fax: 0727 860263

WRITE - BACK

POCKET BOOK OR PSION SERIES 3?

When my Sharp IQ was stolen, I decided to replace it with an Acorn Pocket Book and bought one as soon as it came out. However, I've discovered that 'accessories' which I would have considered fairly essential are either costly extras or not available yet.

I tried to get some answers from Acorn about the working of the machine (a reworking of the successful Psion Series 3), but was referred to Psion. Psion said it will not be supporting the machine, and that I should refer all queries to Acorn!

The A-link is now available at £50. I would consider this an essential extra for a battery-backed memory device, so really you should add £50 to the price of the Pocket Book. The OPL programming language built into the Psion 3 is an extraordinary £70 extra for the Pocket Book.

The two major applications you get 'free' with the Pocket Book (in place of World *and* Agenda*) would be extras for the Psion 3, namely the spreadsheet (£70) and spelling checker. Those of you who consider a mobile spreadsheet a useful accessory might therefore regard the Pocket Book as a good buy: but look at what's missing. Apart from the word processor, the Sharp IQ has all the facilities of the Pocket Book, plus world time zones, calendars, agenda planner and a wide range of plug-in cards - and it costs a good deal less.*

Ironically, if I could fit my Cambridge Z88 in my pocket, I'd probably just use that - it's got all the above plus Arc-compatible word processor (Pipedream), BBC Basic, a serial port, and good backup. And it costs an awful lot less than either the Pocket Book or the Psion Series 3.

Kell Gatherer

We covered the Psion Series 3, and the differences and relative merits compared with the Acorn Pocket Book, last month (RISC User 6:2). Further, this issue contains an assessment of the A-link and other aspects of the Pocket Book. With regard to support, we contacted Acorn who confirmed that this product is fully supported by Acorn, and that users should not expect support from Psion.

THANKS FOR SMALL OBEY FILES

Thank you for the article about small Obey files. I managed to sort out my problem of printing A3 size using Computer Concepts' Turbo Driver on my Canon BJ330 by using the following Obey file:

```
FX138,27
FX138,67
FX138,99
```

This sets the printer to 99 lines (by sending ESC C 99 to the printer). If your printer driver resets the printer (ESC @) after printing, then the Obey file has to be run every time you want to print anything out.

B.Cocksedge

MORE ALARMS WITH RISC OS 3.10

Further to my previous letter (see Write-Back, RISC User 6:2), another bug has come to light in the Alarm application. I noticed that in the Alarm's (browser) window, that a meeting which I attend on the first Monday of each month was displayed not as it should have been (for Monday 7th December 1992), but for Tuesday 7th December 1993. Operation had been correct for the October and November first Mondays. Testing showed the same failure whenever December was reached in any one year: the year was advanced when it should not have been, and the date was a literal repeat of the date of the last alarm, giving the wrong day of the week.

This seems to be a straightforward failure to implement the correct algorithm for advancing an alarm setting.

Ken Cowap

NON TV-RATE MONITORS

Readers of David Spencer's article "Choosing the Right Monitor" (RISC User 5:10) might be interested in the following extra hints, before purchasing a monitor which does not support TV scan rates.

One of the Arc's features is the relative ease with which mode emulators can be written, for a favourite high-resolution monitor (see previous articles in RISC User including 5:3, 5:5 and 5:6). Even the humble Acorn monitor, thought of as 80 (132) columns by 32 lines, can be stretched to 96 (144) by 36.

A high-performance non-TV rate monitor, such as the 14-inch Taxan 795 which David mentioned, might sensibly be chosen for program writing or DTP. The 795 is crisp at resolutions up to about 1152x424, and quite usable at 880x656 on the Arc (82 lines of 110 characters, but you might need a magnifying glass!).

Because such monitors are good for 480 lines or more, a TV mode's 256 lines will not fill the screen unless you adjust the height; but the spot size remains small, so the lines have visible gaps and appear dim. In practice you leave the monitor set to "VGA" and you tolerate shrunken games. At very high (SVGA) resolutions, the 795 will automatically switch from VGA to the front knob settings.

With these monitors, a 36MHz VIDC clock (provided by a VIDC Enhancer) is necessary for 132 column modes and for SVGA modes. But games, VGA, and modes up to about 800x424 are best obtained at 24MHz. This is done by RMLoading a Module to modify the VIDC scan parameters.

This alleviates an important problem. 36MHz would speed up both the video and audio data rates; this not only produces accelerated high-pitched sound, but also gobbles up memory bus bandwidth, often causing sound to break up, games to slow down, and filing operations to take longer. At 24MHz the problem is much smaller, but not absent.

Some programs issue *RMCLEAR to gain RAM, killing the mode module; however, owners of expensive monitors will doubtless have enough RAM to edit this out. The real problem arises with those unhygienic games which re-configure and re-boot the machine before running, prohibiting use of the mode module. Ugh!!

A 36MHz VIDC Enhancer might cure the re-boot problem by translating TV scan rates into the range of the monitor. But the game might still not work, and it can cause problems for the PC Emulator. Moreover, VIDC operation is not guaranteed at 36MHz; my VIDC, for one, won't work in 256-colour modes.

Toby Williams

THANKS FOR THE WIMP BOOK

This is just a small note to say thank you very much for publishing **Wimp Programming for All**. I bought a copy at the Acorn User Show and within 9 days had discovered that programming the Wimp was not the bug-bear I thought it was.

I've only had my A5000 a few months, and am currently writing my final year B.Sc. Computing project on it. Up to now I had written my own event-driven system, which didn't work in the Desktop, took over the whole machine, and wasn't very RISC OSish at all. Now, thanks to you, I have my prototype toolbox up and running (in the Desktop). Although I am writing this in C (Basic sadly doesn't gain many Brownie points at B.Sc. level), I found that both the program listings and the text translated easily into C code.

Tom Kirby-Green

THE BENEFITS OF RISC OS 3.10

I have recently installed RISC OS 3.10 on my A420 and I must say that I consider it £50 well spent. Acorn has obviously made sure that adequate supplies of the upgrade are available because within three days of placing my order (via Beebug) the package was on my doorstep. The new features of RISC OS 3 have been well documented, but I would like to single out the vastly improved printer driver and the implementatiom of the DOS disc system. Producing PostScript files to be downloaded to a laser printer via a PC is now a doddle. Surprisingly the system will even note the presence of a 360K 5.25" disc in my 80-track drive and automatically double-step to read it.

I also have an Aleph One ARM3 upgrade, and I can confirm that RISC OS 3 now contains the required code to run the cache, so that the Aleph supplied support software is no longer needed.

Nice one Acorn - keep up the good work.

Tim Dawson

MISCELLANY

With reference to **Write-Back**, RISC User 6:1 regarding the buffering of Star printers, what can be done is to print to a file first, and then print the file to the printer later. By printing in this way all release 2 printer drivers multi-task.

101 things to do with a dead ARM: I have made my own belt buckle of a dead VIDC - an absolute collectors item - only computer people understand what the black thing is. Another idea is to make a tie pin out of it.

Knut Folmo, Norway.

PIN BOARD

GIVING THE A4 THE BOOT

I have an A4 which generally works well. However, it has a habit of not always auto-booting. When it decides it's not going to work, it simply comes up with the default Desktop, and doesn't even attempt to read the boot file. Double-clicking on the !Boot file works fine. Do any other A4 owners have similar problems or is this a hardware problem unique to my machine?

Mike Hobbs

ENGINE DEMOS

I would like to find some software to display the workings of 2-stroke and 4-stroke petrol and diesel engines, but I find no evidence of anything being available. I wish I could write this kind of material, but I can only manage mundane programs. Nevertheless I would be grateful if you could point to anything suitable.

A.H.Evans

By chance, I saw just what you are seeking on 4mation's stand during a recent Acorn Roadshow. The product is called Noot and it comes with collections of animations (including a variety of engine animations) as well as allowing you to design your own. Noot costs £45 ex. VAT and 4mation can be contacted on 0271 25353. If readers know of any other sources of suitable animations we can pass the information on.

UPDATING THE RISC USER DIARY

I have become interested in the Diary program included on the RISC User discs for 2:10 (October 1989). A drawback is that entries for events which occur every year cannot be automatically rolled forward but must be manually re-entered each year. Can anyone help in upgrading this otherwise excellent little program?

George Foot

TextAid

from Rheingold Enterprises

TextAid provides valuable additional facilities for any other applications which handle text input, for example text editors, word processors, DTP packages, spreadsheets, databases etc. *TextAid* allows you to define, edit and store up to 20 text macros of 40 characters each, any of which can be inserted by one simple mouse click into any document or writable icon which owns the caret.

If ever you wished that your favourite application had a facility to define macros, TextAid can now provide it for you!

Control codes can be included in macros to insert the current date and/or time, and also an incremental value (for example, subsequent clicks could insert "Item 1", "Item 2", "Item 3" etc.).

TextAid also enables text to be transferred from any text icon or window title bar visible on the Desktop, into any document belonging to any other application, just as if it were being typed in from the keyboard. There are many uses for this; for example, you can insert pathnames into writable icons directly from the directory title bar, without having to retype the whole name; you can transfer the results of a calculation from one application into another; and so on.

Also provided in *TextAid* are a facility to convert CSV and TSV files to text and vice versa, and a useful facility to include printer control codes in Edit documents. *TextAid* therefore makes it very simple to produce documents with Edit which can be printed using the full range of printer styles (bold, italic, underline etc.).

TextAid is an invaluable tool for anyone who uses applications which process text!

TextAid costs £9.95 inc. VAT and P&P, and is available from:
Rheingold Enterprises
17 Ingfield Terrace, Slaithwaite, Huddersfield HD7 5BJ tel. 0925 210657

Turing Tools
149 Campbell Road, Cowley
Oxford, OX4 3NX, UK
Tel. (0865) 775059

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Jello and the Art of 3D Graphics Part 4: Boing!

In the final part of this short series, Mark Moxon gets physical and explains why Jello is called Jello.

Jello is what Americans call jelly, believe it or not. What this has to do with 3D graphics in general is debatable, but if you type in the additions to this month's Jello application you'll see what I mean. Imagine the Jello is made of jelly, and you'll see the connection.

What we have effectively done is make all the edges in the Jello act like springs, and have added a spring to join each point to the Jello's centre. This makes the Jello look like it is made of jelly, and the result is quite fascinating to watch. Remember, the calculations are all performed in real time, and if you have an ARM3, try turning the cache off to see the difference it makes.

The way that real time simulation works in general is to step through time, and at each step work out the new position of the object depending on its position at the last time step. If the time steps are made small enough, then the simulation appears to happen continuously and realistically. There must, therefore, be a trade-off between realism and accuracy. This manifests itself in Jello when the internal forces get too large and the Jello implodes (just like real jelly!)

The maths involved in jellifying the Jello is not as complicated as you may think. If a spring is stretched, then a force tries to pull it back together again, and this force F is given by the equation:

```
F = -kx
```

where k is the so-called *spring constant* and x is the spring extension. The next equation is Newton's law linking force and acceleration:

```
F = m*a
```

where m is the mass of an object and a is its acceleration. Imagine the vertices of the Jello are 1kg masses and the spring constant of the springs is 1N/m (which we are allowed to do, as we are inventing this whole system). Then by combining the above we get the following:

```
a = -x
```

In other words, if a Jello spring is extended by a distance x, it will exert an acceleration of -x on the vertices at each end of the spring.

Now, say we know the velocity and extension of a vertex and spring at time t, and we want to know the velocity and extension at time t+dt (where dt is a small time interval). Define:

```
Velocity  at time t = v0
Extension at time t = x0
Velocity  at time t+dt = v1
Extension st time t+dt = x1
```

We know from the above paragraph that the acceleration of the vertex due to the spring at time t is given by a=-x0, so the new velocity and extension are:

```
v1 = v0 - x0*dt
x1 = x0 + v1*dt
```

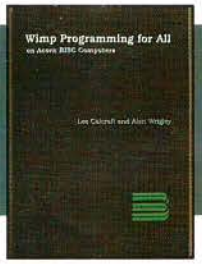
Note that the last equation is not totally correct mathematically, but it is adequate for discrete time simulation.

What this boils down to is that if we store the velocities and extensions of each vertex and spring, we can work out how the jello wobbles in the time interval dt, and if we make dt small enough the motion looks reasonably realistic. Simpler than you think, really.

That brings us to the end of this short series. I do hope you've enjoyed it, and that you can now try to simulate life on your computer. I'm working on a 3D spider simulation, but it keeps exploding... maybe that's a good thing?!

Add to Jello Main

```
260 LIBRARY "Gravity"
270 LIBRARY "MoveJello"
280 LIBRARY "SquareRoot"
290 :
320 outer%=-2:inner%=0:g%=8
510 FOR I%=0 TO 11:FOR J%=0 TO 4
520 READ springs!(off%+I%*20+J%*4)
530 NEXT J%:NEXT I%
910 DATA 1, 4, 5, 6,10, 0, 2, 5, 6, 7
```



Wimp Programming for All
On Acorn RISC Computers

by Lee Calcraft and Alan Wrigley

We believe that Wimp Programming for All will prove to be the definitive book on this subject for all users of Acorn RISC computers.

This new book provides programmers with a complete introduction to all the techniques involved in writing multi-tasking Wimp programs to run within the RISC OS Desktop environment. No prior knowledge of the Wimp is assumed and the tutorial style of the book will enable all programmers to understand the concepts involved and to develop their skills in writing high quality programs within the Desktop environment.

SPECIAL OFFER for RISC User subscribers:

Buy the book and disc together for just £14.95!

£14.95

Contents

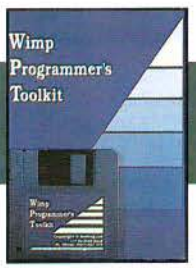
Wimp Programming for All derives from the highly popular series of articles originally published in volume 3 of RISC User magazine and written by Lee Calcraft. This has been extensively revised with substantial additional material, all brought up to date for RISC OS 3. All example programs are given in BBC Basic.

To support the book there is a disc containing all the programs (at different stages of development) as listed within the book, together with additional supporting applications.

The book consists of ten main chapters and a number of appendices:

- Chapter 1: Introducing the Wimp
- Chapter 2: Windows
- Chapter 3: The Wimp Poll Loop
- Chapter 4: Error Handling
- Chapter 5: Icons
- Chapter 6: Menus
- Chapter 7: Redrawing Windows
- Chapter 8: The Wimp Message System, Loading and Saving Data
- Chapter 9: Templates
- Chapter 10: Printer Drivers and Outline Fonts

- Appendix A: Indirection Operators
- Appendix B: Application Resources
- Appendix C: Setting up a sprite area
- Appendix D: SWI calls described in this book
- Appendix E: Associated Disc
- Appendix E: The Wimp Programmer's Toolkit



AN ESSENTIAL AID TO ANY PROGRAMMER

Wimp Programmer's Toolkit

a selection of powerful utilities complementing the book, Wimp Programming for All

- SPYGLASS - displays the contents of memory allocated to any task currently running.
- WIMP DEBUGGER allows you to debug Wimp-based programs while testing and running them.
- TEMPLATE EDITOR - the latest version of Acorn's FormEd for designing windows and icons.
- TEMPLATE FILE BROWSER allows you to view the contents of a template file.
- APPLICATION SHELL GENERATOR - a utility for creating application directories, Obey files and their sprites.
- MENU EDITOR - create and edit Wimp menu structures for use in your own programs.
- WIMPAID allows pointer, window and icon parameters to be dynamically displayed on screen.
- ICONBAR SHELL GENERATOR allows you to build simple multi-tasking programs by creating a shell.
- DESKTOP FILE LOADER allows you to load a program from the Desktop, rather than run it.
- ICON FLAG GENERATOR calculates the value of icon flags without recourse to binary arithmetic.
- EASYWIMP provides a ready-made Wimp application shell to be used for creation of single-window applications.
- WIMP MESSAGE MONITOR provides a means of monitoring the Wimp polling system.

BK12b	Wimp Programming for All book	£12.95 incVat	*Please add p&p in each case.*
BK11b	Wimp Programming for All book and disc	£14.95 incVat	*For p&p charges refer to p.71 in*
PWPTb	Wimp Programmer's Toolkit and manual	£19.95 incVat	*the magazine.*

RISC Developments, 117 Hatfield Road, St Albans, Herts AL1 4JS. Tel 0727 40303 Fax 0727 860263

```
 920 DATA 1, 3, 5, 7, 8, 2, 4, 5, 8, 9
 930 DATA 0, 3, 5, 9,10, 0, 1, 2, 3, 4
 940 DATA 0, 1, 7,10,11, 1, 2, 6, 8,11
 950 DATA 2, 3, 7, 9,11, 3, 4, 8,10,11
 960 DATA 0, 4, 6, 9,11, 6, 7, 8, 9,10
 970 :
1180 .springs EQUS STRING$(12*20,CHR$0)
1260 .gravx EQUD 0:.gravy EQUD 0
1270 .gravz EQUD 0:.touch EQUD 0
1280 FNjello:FNisqrt
1290 FNcheck_point:FNgravity
1320 .xv     EQUS STRING$(12*4,CHR$0)
1330 .cenxv EQUD 0
1340 .yv     EQUS STRING$(12*4,CHR$0)
1350 .cenyv EQUD 0
1360 .zv     EQUS STRING$(12*4,CHR$0)
1370 .cenzv EQUD 0
1800         EQUS STRING$( 10,CHR$0)
2210 BL gravity:BL jello
```

Gravity

```
  10 REM >Gravity
  20 :
  30 DEF FNgravity
  40 [OPT pass%:.gravity
  50 STMFD R13!,{R14}:MVN R3,#255
  60 LDR R0,xrot:LDR R1,yrot
  70 FNadr(5,sin):ADD R6,R5,#360
  80 LDR R7,[R5,R0,LSL#2]
  90 LDR R8,[R6,R0,LSL#2]
 100 MUL R4,R7,R3:MOV R4,R4,ASR#8
 110 RSB R4,R4,#0:MUL R3,R8,R3
 120 LDR R7,[R5,R1,LSL#2]
 130 LDR R8,[R6,R1,LSL#2]
 140 MUL R2,R7,R4:MUL R4,R8,R4
 150 MOV R2,R2,ASL#g%:MOV R3,R3,ASL#g%
 160 MOV R4,R4,ASL#g%:STR R2,gravx
 170 STR R3,gravy:STR R4,gravz
 180 LDMFD R13!,{PC}:]:=""
```

MoveJello

```
  10 REM >MoveJello
  20 :
  30 DEF FNjello
  40 [OPT pass%:.jello:STMFD R13!,{R14}
  50 MOV R0,#0:STR R0,touch:MOV R10,#11
  60 .j1:FNadr(0,xj)
  70 ADD R0,R0,R10,LSL#2
  80 LDR R3,[R0]:LDR R4,[R0,#yj-xj]
  90 LDR R5,[R0,#zj-xj]:LDR R6,gravx
 100 LDR R7,gravy:LDR R8,gravz
 110 MOV R9,#4:.j2:MOV R0,#20
 120 MOV R1,R9,LSL#2:MLA R1,R10,R0,R1
```

```
 130 FNadr(0,springs):LDR R0,[R0,R1]
 140 FNadr(2,xj):ADD R2,R2,R0,LSL#2
 150 LDR R11,[R2]:SUB R11,R3,R11
 160 LDR R12,[R2,#yj-xj]:SUB R12,R4,R12
 170 LDR R14,[R2,#zj-xj]:SUB R14,R5,R14
 180 FNboing(outer%):SUBS R9,R9,#1
 190 BGE j2:LDR R11,cenx:LDR R12,ceny
 200 LDR R14,cenz:SUB R11,R3,R11
 210 SUB R12,R4,R12:SUB R14,R5,R14
 220 FNboing(inner%):BL check_point
 230 FNadr(0,xt):ADD R0,R0,R10,LSL#2
 240 STR R3,[R0]:STR R4,[R0,#yt-xt]
 250 STR R5,[R0,#zt-xt]
 260 SUBS R10,R10,#1:BGE j1:LDR R3,cenx
 270 LDR R4,ceny:LDR R5,cenz
 280 LDR R6,gravx:LDR R7,gravy
 290 LDR R8,gravz:MOV R10,#11:.j3
 300 FNadr(2,xj):ADD R2,R2,R10,LSL#2
 310 LDR R11,[R2]:SUB R11,R3,R11
 320 LDR R12,[R2,#yj-xj]:SUB R12,R4,R12
 330 LDR R14,[R2,#zj-xj]:SUB R14,R5,R14
 340 FNboing(inner%):SUBS R10,R10,#1
 350 BGE j3:MOV R10,#12:BL check_point
 360 FNadr(0,cenx):STR R3,[R0]
 370 STR R4,[R0,#ceny-cenx]
 380 STR R5,[R0,#cenz-cenx]:MOV R10,#11
 390 .j4:FNadr(0,xt)
 400 ADD R0,R0,R10,LSL#2:FNadr(1,xj)
 410 ADD R1,R1,R10,LSL#2:LDR R3,[R0]
 420 LDR R4,[R0,#yt-xt]
 430 LDR R5,[R0,#zt-xt]:STR R3,[R1]
 440 STR R4,[R1,#yj-xj]
 450 STR R5,[R1,#zj-xj]:SUBS R10,R10,#1
 460 BGE j4:LDMFD R13!,{PC}:]:=""
 470 :
 480 DEF FNboing(w%)
 490 [OPT pass%:MUL R0,R11,R11
 500 MOV R1,R0,ASR#8:MUL R0,R12,R12
 510 ADD R1,R1,R0,ASR#8:MUL R0,R14,R14
 520 ADD R1,R1,R0,ASR#8
 530 STMFD R13!,{R14}:BL isqrt
 540 LDMFD R13!,{R14}:MOV R0,R0,LSL#4
 550 SUB R1,R0,#28*256:FNadr(2,recip)
 560 LDR R0,[R2,R0,LSL#2]:MUL R0,R1,R0
 570 ]
 580 IF w%>0 THEN
 590 [OPT pass%:MUL R1,R11,R0
 600 SUB R6,R6,R1,ASL#w%:MUL R1,R12,R0
 610 SUB R7,R7,R1,ASL#w%:MUL R1,R14,R0
 620 SUB R8,R8,R1,ASL#w%:]
 630 ELSE IF w%<0 THEN
 640 [OPT pass%:MUL R1,R11,R0
 650 SUB R6,R6,R1,ASR#-w%:MUL R1,R12,R0
 660 SUB R7,R7,R1,ASR#-w%:MUL R1,R14,R0
 670 SUB R8,R8,R1,ASR#-w%:]
```

```
680 ELSE
690 [OPT pass%
700 MUL R1,R11,R0:SUB R6,R6,R1
710 MUL R1,R12,R0:SUB R7,R7,R1
720 MUL R1,R14,R0:SUB R8,R8,R1:]
730 ENDIF:ENDIF:=""
740 :
750 DEF FNcheck_point
760 [OPT pass%:.check_point
770 STMFD R13!,{R14}:FNadr(0,xv)
780 LDR R1,[R0,R10,LSL#2]!
790 ADD R6,R1,R6:ADD R3,R3,R6,ASR#20
800 LDR R1,[R0,#yv-xv]:ADD R7,R1,R7
810 ADD R4,R4,R7,ASR#20
820 LDR R1,[R0,#zv-xv]:ADD R8,R1,R8
830 ADD R5,R5,R8,ASR#20:MOV R1,#0
840 CMP R3,#cs%*256:MOVGT R3,#cs%*256
850 MOVGT R1,#1:CMP R4,#cs%*256
860 MOVGT R4,#cs%*256:MOVGT R1,#1
870 MOV R0,#zdist%:ADD R0,R0,#cs%*256
880 CMP R5,R0:MOVGT R5,#zdist%
890 ADDGT R5,R5,#cs%*256:MOVGT R1,#1
900 CMP R1,#1:BEQ cp1:CMN R3,#cs%*256
910 MVNLT R3,#cs%*256:MOVLT R1,#1
920 CMN R4,#cs%*256:MVNLT R4,#cs%*256
930 MOVLT R1,#1:MOV R0,#zdist%
940 SUB R0,R0,#cs%*256:CMP R5,R0
950 MOVLT R5,#zdist%
960 SUBLT R5,R5,#cs%*256:MOVLT R1,#1
970 CMP R1,#1:BEQ cp1:FNadr(0,xv)
980 STR R6,[R0,R10,LSL#2]!
990 STR R7,[R0,#yv-xv]
1000 STR R8,[R0,#zv-xv]:LDMFD R13!,{PC}
1010 .cp1:MOV R0,#1:STR R0,touch
1020 MOV R6,#0:MOV R7,#0:MOV R8,#0
1030 FNadr(0,xv):STR R6,[R0,R10,LSL#2]!
1040 STR R7,[R0,#yv-xv]
1050 STR R8,[R0,#zv-xv]
1060 LDMFD R13!,{PC}:]:=""
```

Square Root

```
10 REM >SquareRoot
20 :
30 DEF FNisqrt
40 [OPT pass%:.isqrt
50 STMFD R13!,{R1-R8,R14}:MOV R2,#%11
60 MOV R3,#30:MOV R0,#0:MOV R6,#0
70 MOV R7,#1:.isqrt1:MOV R0,R0,LSL#1
80 AND R5,R2,R1,LSR R3
90 ORR R6,R5,R6,LSL#2
100 ADD R4,R7,R0,LSL#1:CMP R6,R4
110 SUBGE R6,R6,R4:ADDGE R0,R0,#1
120 SUBS R3,R3,#2:BPL isqrt1
130 LDMFD R13!,{R1-R8,PC}:]:=""
```


The Hampshire Microtechnology Centre

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We just didn't have room for it all ! We couldn't even mention our superb curriculum support packs, our software guides, our third party software prices, our National Curriculum IT planning & tracking material or our complete subscription based support service for schools. We would be glad to send you a complete brochure and price list.

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complete resource packs containing an interactive multimedia application with sound, animations, masses of superb Draw files, lots of information, !MyWorld and database files, practical exercises, pupil activities, worksheets and NC links. Packs include **Bridges, Greeks and 'Move It'.** Terrific value - eg. Bridges is a seven disc set for £39.95 inc. a site license.

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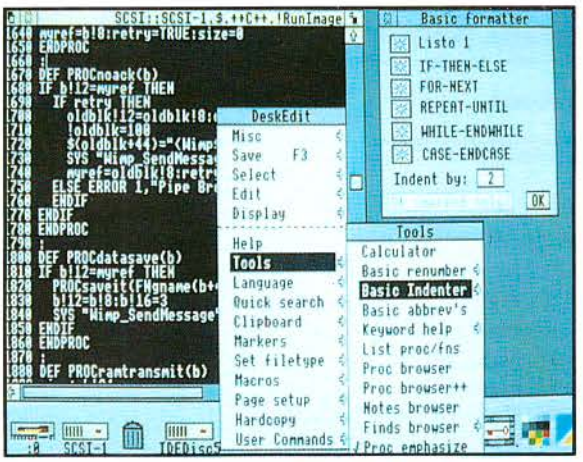
Centre

THE BEST PROGRAM AND TEXT EDITOR FOR THE ARC HAS JUST GOT A LOT BETTER

NEW DeskEdit 2

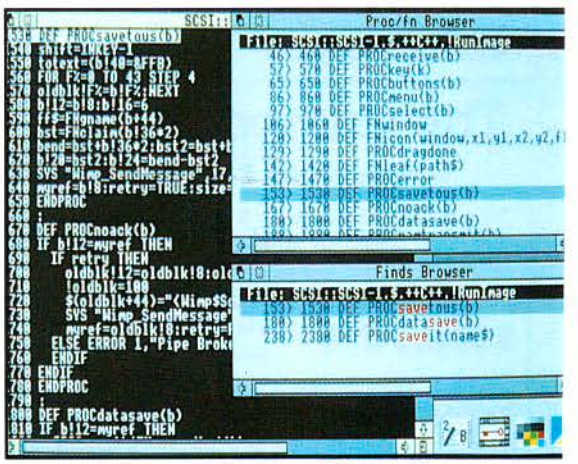
A major new release of the popular and powerful editor DeskEdit brings a whole toolkit of features that will assist all programmers, whether novice or experienced, and whether using Basic or C - and all within Acorn's powerful multi-tasking RISC OS Desktop. There is a lot for text users too.



Using DeskEdit's new Tools

NEW FEATURES INCLUDE:

- **Basic program Renumber** - and for a partial renumber, just mark a section.
- **Basic Program Indenter** - automatically reformats Basic programs to indent after IF THEN, REPEAT, FOR etc. - all fully customisable.
- **Basic Abbreviations** - all Basic V's several hundred abbreviations are implemented (optionally). Just type P. and if you are in Basic it will change into the keyword PRINT.
- **Programmer's Calculator** - a powerful calculator especially designed for handling bits and bytes. Simultaneously operates in decimal, hex and binary, and can import and export results to and from any text window.
- **Multi-purpose Browsers** - Press F2, and enter a search string. This brings up a browser window containing a list of finds. Click on any one of these and you are taken to the corresponding place in your source or text file. Alternatively Shift-F2 puts up a new browser window containing a list of all the functions and procedures defined in your source.



The new Browsers in use

- **Throwback** is fully implemented so DeskEdit can respond to messages from C compilers etc.
- **!FIND** - DeskEdit comes with a powerful stand-alone Acorn application called *Find*, which can find text strings in a whole group of files, just given a wildcarded filename.

  DeskEdit picks up the output from *Find*, and displays a window with all the finds. Just click on any find in the window, and the file will be automatically loaded into DeskEdit (if it is not already there), and the caret will be placed at the find.
- **Extended Saves** - DeskEdit 2 will (optionally) save a special data file each time you make a normal save. Next time you load your file, not only will the caret be where it was when you saved it, but wordwrap will be correctly set, all markers will be set to their previous positions, and pressing Undo will actually take you through what you did when you last edited your file!

And there is much more that is new in DeskEdit 2.

A new Keyword Help can now give help on any keyword marked in your text. A full Basic Help file is included.

The first line of Function and Procedure definitions can be highlighted in a printout. QuickSearch can now be performed backwards as well as forwards, and can also find procedure and function definitions which match your string. You can even use a marked piece of text to supply the target string for a Quicksearch.

Shift-Delete deletes to the end of a line, Ctrl-Delete deletes to the start of a line, and Shift-Ctrl-Delete deletes left and appends to the line above. Shift-Backspace performs an intelligent word-delete. There are new tabbing options etc. **All designed to make editing fast and efficient.**

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TECHNICAL QUERIES ?

Alan Wrigley answers questions on the floating-point indirection operator, address exception errors, 3D icons and altering the size of a window.

Q *Dear Sir*
I saw a program recently which included the following statement:

```
|store%=price
```

I know that in an Obey file, a vertical bar can be used to indicate a comment, but is this the same in Basic?

Terry Dickson

A The simple answer to this is no - the vertical bar in Basic V is in fact used as a floating-point indirection operator. Earlier versions of BBC Basic had single-byte (?), four-byte integer (!) and string ($) operators, but not one for floating-point values.

The floating-point operator works in the same way as the others, except that it stores a value in five bytes (starting at *store%* in the example you have given) in standard floating-point format (see the BBC Basic Guide for more details if you need to know what that format is). Note, however, that the so-called dyadic form of notation is not available with this operator - in other words, you cannot use, for example:

```
store%|100=price
```

but must instead use:

```
|(store%+100)=price
```

Q *Dear Sir*
Could you please explain the meaning of the Address exception errors which occur from time to time on the Desktop?

Ryan Haynes

A The ARM chip has an address bus 26 bits wide, which means that in theory it can address 64 Mb of memory (0-&3FFFFFFF). Address exception errors occur when a program attempts to access a memory location outside this range. A related error is "Abort on data transfer", which occurs when the program tries to access a location within this range but which cannot be accessed, either because the memory in that area is protected against user mode access, or because there is no mapping between this logical address and physical RAM. For example, a 4 Mb Archimedes leaves a good deal of the addressable range unused (though if you were to trap the error, as described below, you could re-route the access to disc, say, and thus implement a virtual memory system).

These are both hardware errors - the ARM is designed to detect these occurrences and call a vector if they happen. The default action of the vector routine is to call what is known as a *handler* - a short routine which copes with special conditions while the computer is running, such as an event, an escape condition, or an exception such as those I have just described. The default action of the exception handlers is to generate an error, as you have seen, but it is possible to substitute your own handlers for the default ones to carry out any action you want. You would need to be fully conversant with the section in the PRM entitled *Program Environment* before attempting to do anything of this nature.

The two errors described are invariably caused by a program fault. With a Basic program, they are most likely to occur where you are using indirection operators, and you have miscalculated the address to be accessed. Take an icon data block, for

example. If the icon is not indirected, then the text is placed directly into the block, and can be read as $(block+20). If it is indirected, then block+20 holds a pointer to the text, and the text itself is therefore accessed as $(block!20). If you tried to read $(block!20) for a non-indirected icon, you could well end up with an address exception, since the first four characters of the text are quite likely to make up a value greater than &3FFFFFFF. Note that neither error is passed to Basic's error handler, so they will invariably cause the program to terminate.

Q *Dear Sir*
How do I design 3D icons, such as those used in your Yahtzee game (RISC User 5:9)?

Nigel Morris

A If you have RISC OS 3, you can create 3D icons very easily. Just include in the validation string the R command followed by a number between 1 and 7 to get various types of 3D icon, such as raised slab, sunken slab, ridged or channelled edges etc. Some of these icon types allow the background colour of the icon to change when you click over it.

A raised slab 3D sprite icon

With RISC OS 2, you have to use sprite icons (or text-plus-sprite if text is required), and this is what has been done with Yahtzee. Using Paint, design a sprite the same size as the icon, with two edges of a darker colour than the main body, and the other two edges lighter. Figure 1 shows a typical example. A good starting point is to use colour 1 for the main area, colour 0 for the lighter edges and colour 3 for the darker ones.

Then create an icon with the sprite bit set and the sprite name corresponding to the sprite you have just created. If it is a text-plus-sprite icon, it must be indirected, with the sprite name in the validation string. If you are using FormEd, just drag the file which contains the sprite into the window you are editing, and the sprite should appear in the icon.

A sunken slab icon with a second icon inside it

If the icon is to be writable, this can be done just by setting the button type appropriately. However, it is usually a better idea to create a second icon inside the first, with a white background and black border as shown in Figure 2, and make this writable. This icon is then completely independent of the 3D icon.

Q *Dear Sir*
I have designed a window in which the amount of text is variable. However, having estimated the minimum area necessary, the window would then be too small if the amount of text were to increase. I have noticed with Edit that the scroll bar gets smaller as the amount of text increases, and more window becomes available for scrolling. Can you please tell me how this is done?

Paul Pibworth

A The effect you require is quite simple to achieve, by using the SWI call Wimp_SetExtent (&400D7). This allows you to alter the work area of an existing window at any time, and is the method used by editors such as Edit. On entry, the call expects the window handle in R0, with R1 pointing to a 16-byte block as follows:

```
block +0    new work area min x
      +4    new work area min y
      +8    new work area max x
      +12   new work area max y
```

You should note that the call cannot alter the visible area of the window; in other words, if the new work area specified is smaller than the visible area the call will have no effect, nor can the call cause the window to scroll.

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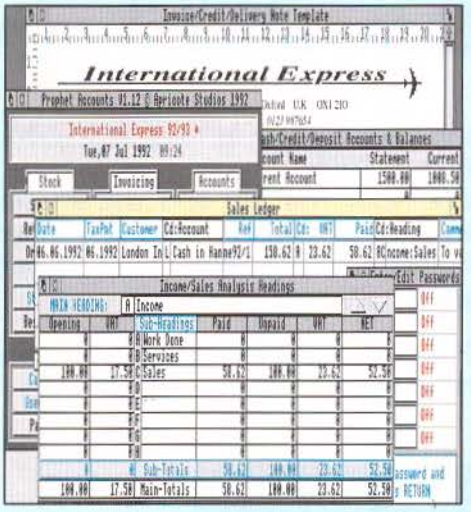

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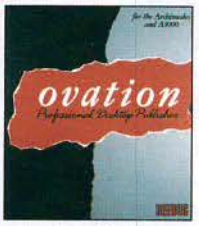

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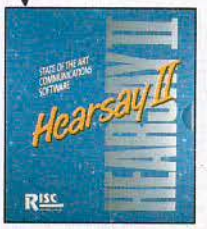

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